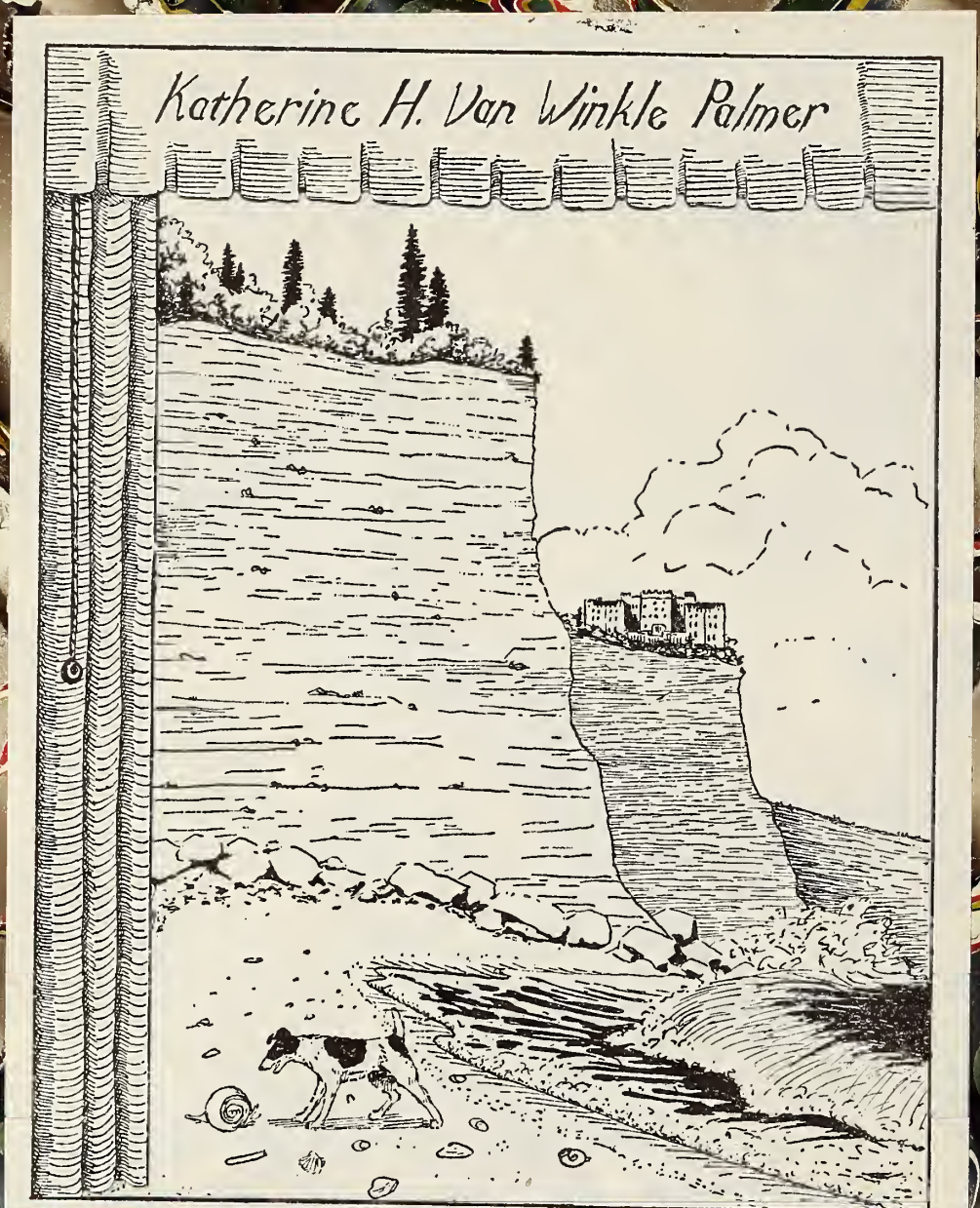
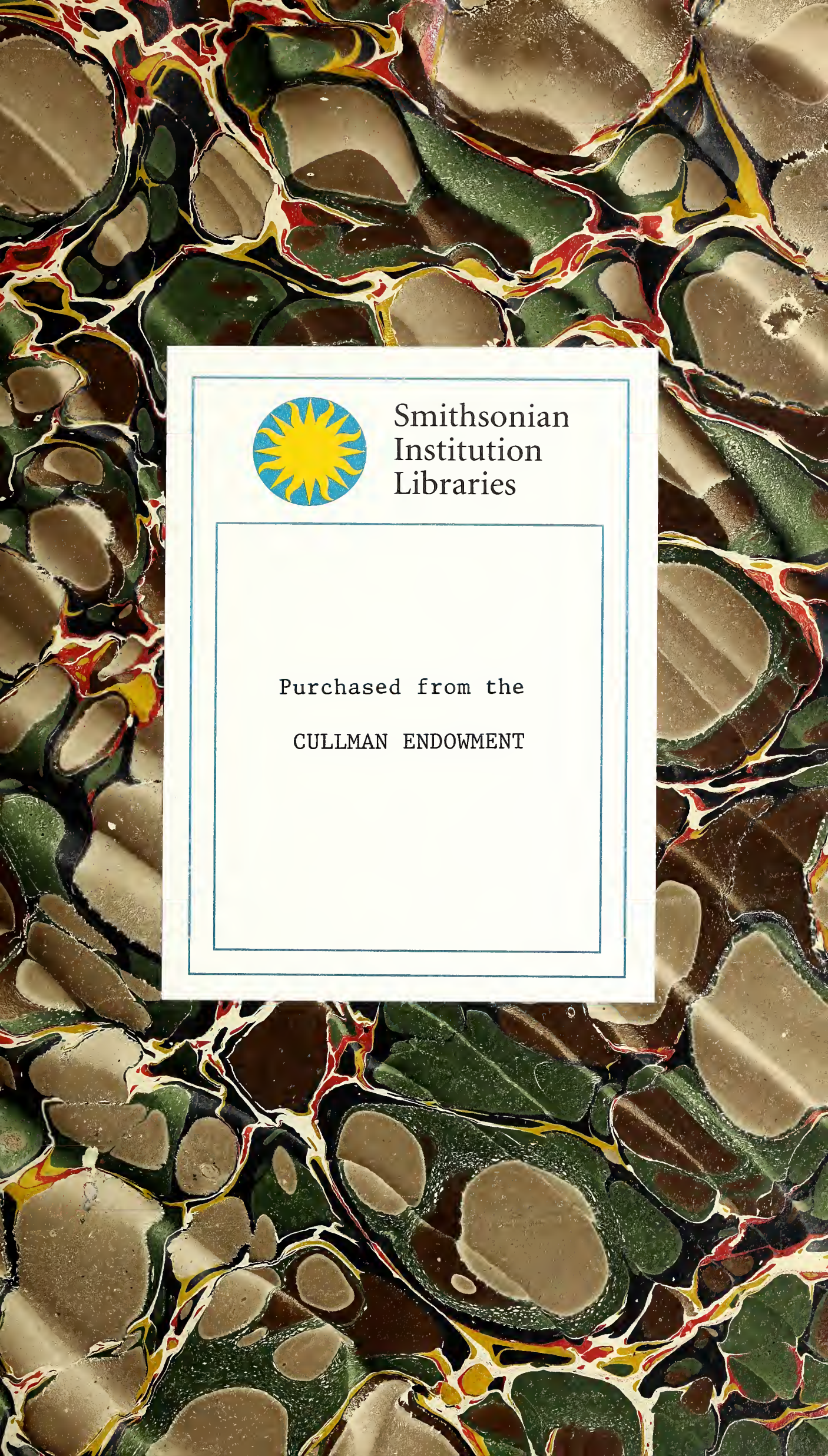

Katherine H. Van Winkle Palmer



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Katherine V. W. Palmer

THE

MINERAL CONCHOLOGY

OF

GREAT BRITAIN;

OR

COLOURED FIGURES AND DESCRIPTIONS

OF THOSE

REMAINS OF TESTACEOUS ANIMALS

OR

Shells,

WHICH HAVE BEEN PRESERVED AT VARIOUS TIMES AND DEPTHS IN THE EARTH.

BY JAMES SOWERBY, F.L.S. G.S. W.S.

HONORARY MEMBER OF THE PHYSICAL SOCIETY OF GOTTINGEN, OF THE SOCIETY OF JENA, &c.

AUTHOR OF BRITISH MINERALOGY, EXOTIC MINERALOGY, BRITISH MISCELLANY, ENGLISH FUNGI, A BOTANICAL DRAWING BOOK, AND A NEW ELUCIDATION OF COLOURS;

DESIGNER OF ENGLISH BOTANY, &c.

Many, O Lord God, are thy wonderful works which thou hast done: they cannot be reckoned up in order to thee: if I would declare and speak of them, they are more than can be numbered.

PSALM xl. 5.

VOL. IV.

LONDON:

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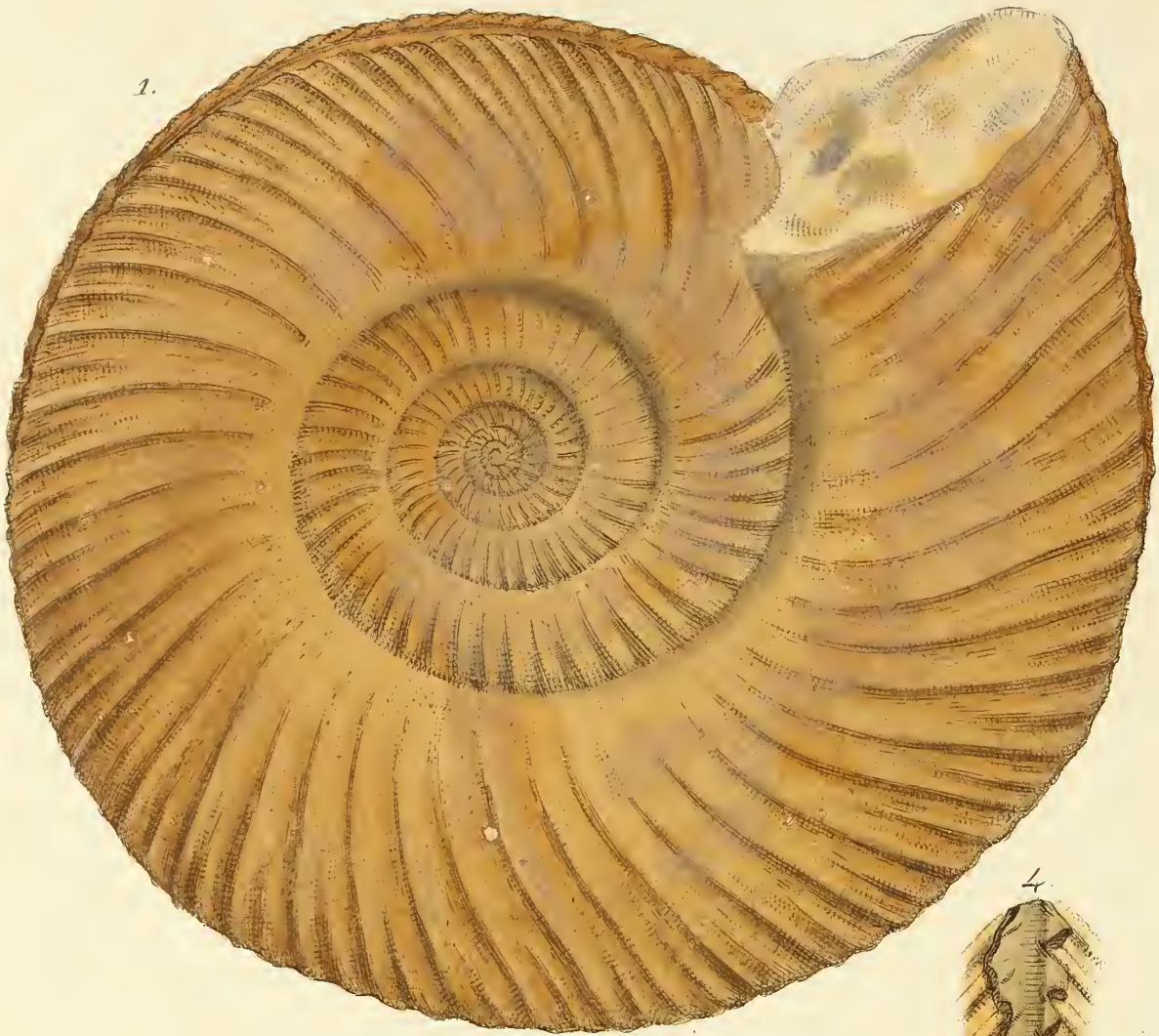

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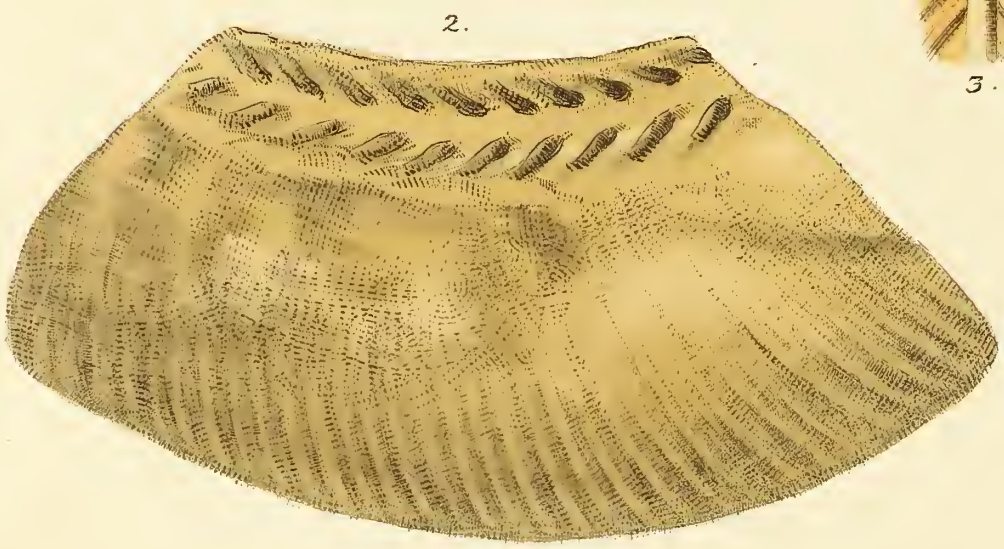

AMMONITES Parkinsoni.

TAB. CCCVII.

SPEC. CHAR. Discoid, with numerous highly elevated radii; whorls numerous, the inner ones exposed; radii slightly arched, bifid near the front which is very narrow and plain.

VOLUTIONS numerous, with slightly convex sides and narrow edges: the arched radii are bent forward at their outer ends, and nearly meet at an acute angle upon the front, but do not pass over it: the edge of the shell is nearly flat, in the cast it is hollow in consequence of the removal of the siphuncle; the aperture is oblong, narrowest towards the front.

This is the Ammonite so frequently split, polished, and sold at Bath: its outer surface is also often ground and polished, shewing ramifying, sinuated, or simply undulated edges to the septa, according to the depth to which it has been worked. Misled by worked specimens that had lost the flat space in the middle of the edge, I have erroneously referred this species to the Am. giganteus, at page 55 of Vol. I. while speaking of such as are found near Keynsham, and those fine specimens given me by Dr. Lettsom, all of which are flatter than even the variety α of the giganteus, and have more whorls. The species before us occurs chiefly in Lyas, a stratum not known to contain any silicious deposit; it is consequently never imbedded in Chert or Flint, like the A. giganteus β. I suspect it also may be found

in the lower beds of the Ironshot Oolite, as the specimen now figured is from near Yeovil, and contains vestiges of ferruginous grains. I am indebted to the kind attention of Dr. W. E. Leach for preserving it from the gothic hands of the mason, who is often as destructive of the essential characters of fossils, as some dealers still continue to be of the natural forms of recent shells, and who rob them without mercy of venerable coats that had resisted with various success the combined efforts of numerous sea-born enemies, whose ravages even, leave marks more worthy of contemplation than the formal beauty betrayed by the file or polishing brush.

Fig. 2 shews a cast of the margin; it is from a part of an outer whorl found at Shotover Hill, near Oxford.

A section, shewing the chambers filled partially with crystallized Carbonate of Lyme, is given at tab. 12 of British Mineralogy. It often extends to 18 inches or more in diameter, and when cut thin and viewed by transmitted light, offers a specious excuse for the unscientific mason.

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AMMONITES dentatus.
TAB. CCCVIII.

SPEC. CHAR. Discoid, umbilicate, radiated; front square*; radii prominent and forked near their commencement, terminating upon the edges of the front.

SYN. Am. serratus. *Parkinson in Trans. Geol. Soc. V.* 57.

ALTHOUGH this shell may be described as umbilicated, the inner whorls are in part exposed: the radii are slightly curved; they are most prominent at a short distance from their commencement, where also they are forked; each branch is slightly enlarged and bent forward upon the edge of the front, where it ends: thus the front has two serrated edges, the intermediate space being plain: the aperture occupies about two-fifths of the diameter of the shell in length, and is one-fourth in width.

This appears to be A. serratus of Parkinson; but as it is totally different from the Ammonite, to which that name had been previously given at tab. 24 of this work, it has become necessary to change it.

AMMONITES lautus.
TAB. CCCIX.

SPEC. CHAR. Discoid, radiated; inner whorls half concealed; front narrow, slightly concave; principal radii slender, varicose, or tuberculated near their commencement; shorter radii alternating, united in pairs to form compressed tubercles upon the edges of the front.

SYN. Am. lautus. *Parkinson in Trans. Geol. Soc. V.* 58.

var. α, radii long, elegantly arched, and regular.

var. β, radii short, irregular, with strong tubercles near their commencement.

THE inner whorls are more exposed in this than in the last, and the sides of the whorls generally more convex, especially in α: in var. β the lesser radii are often joined at the tubercles to the larger ones; the form of the aperture approaches to elliptical.

Figures 1 and 2 are from var. α, and fig. 6 var. β;

* The siphuncle is sometimes decomposed away, and leaves a hollow that may deceive.

the others are intermediate; fig. 3 shewing long radii with large tubercles; and figures 4 and 5 irregular radii with undefined tubercles.

AMMONITES tuberculatus.

TAB. CCCX.—*Figs.* 1, 2, *and* 3.

Spec. Char. Depressed, radiated; volutions gibbose, half concealed, front rather flat; radii arising in threes from large round tubercles and uniting in pairs to form large compressed tubercles upon each edge of the front; aperture suborbicular.

The sides of the whorls are very convex especially in young shells which have the aperture transverse, the round tubercles are placed near the middle of the side of the whorl; the radii after uniting to form the flat tubercles upon each edge of the front, bend forward and continue over it as far as the siphuncle, which they meet at an acute angle; the length of the mouth is about two-fifths the diameter of the last whorl, its width variable with age.

AMMONITES proboscideus.

TAB. CCCX.—*Figs.* 4 *and* 5.

Spec. Char. Depressed, tuberculated; volutions ventricose, partly concealed; front concave; tubercles upon the sides of the last whorl and both edges of the front, subcylindrical; aperture orbicular.

var. α, tubercles connected by very irregular and short radii.—var. β, destitute of radii.

The orbicular aperture, and elongated nearly cylindrical tubercles, distinguish this species: there are about eight sets of tubercles only upon each whorl, in the preceding species there are 12 or more: the front is broad but not well defined, and the siphuncle very large. The aperture is about one-third the diameter of the shell wide.

The four species of Ammonites above described are all from a stratum of Marle below the Chalk at Folkstone; they are also found in a similar stratum at Cambridge and other places. It is difficult to divide the species, as there appears to be a regular series from that without tubercles (A. dentatus) to one with large flat tubercles upon the margin (A. auritus, M. C. t. 134,) and to another with cylindrical tubercles at each end of the rays, (A. proboscideus); the extremes are, however, so distinct, that it is difficult to refuse them the rank of species. They are all splendidly pearly shells, but are very apt to be destroyed by the decomposition of the Pyrites, with which they are commonly more or less completely filled; those parts that are not pyritous are in the Folkstone specimens filled with black indurated Marle.

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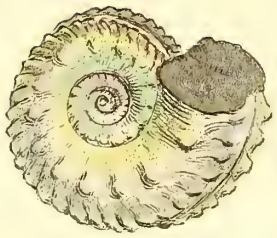

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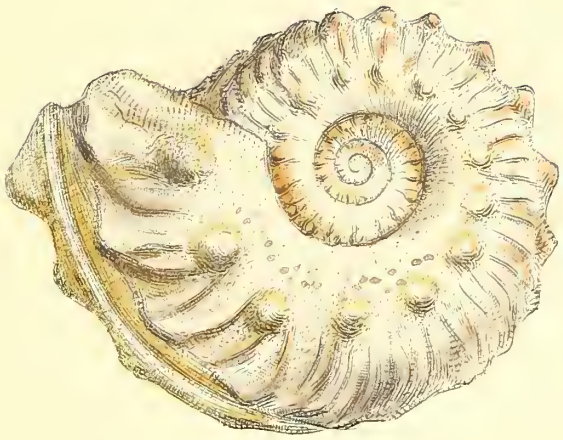

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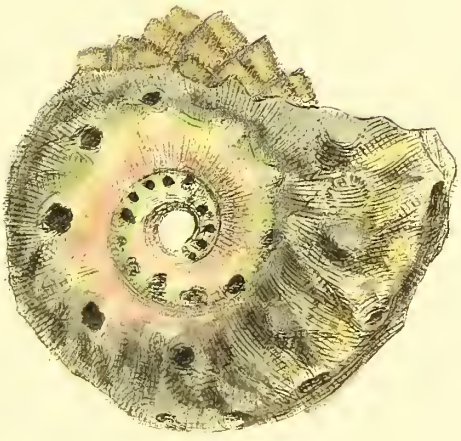

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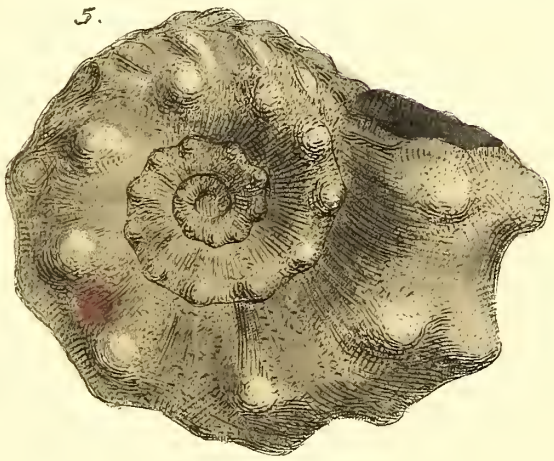
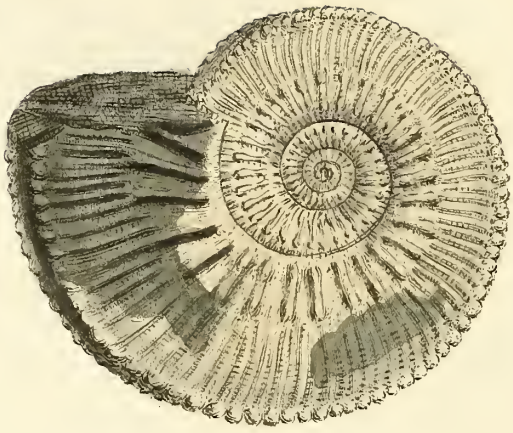




AMMONITES Gulielmii.

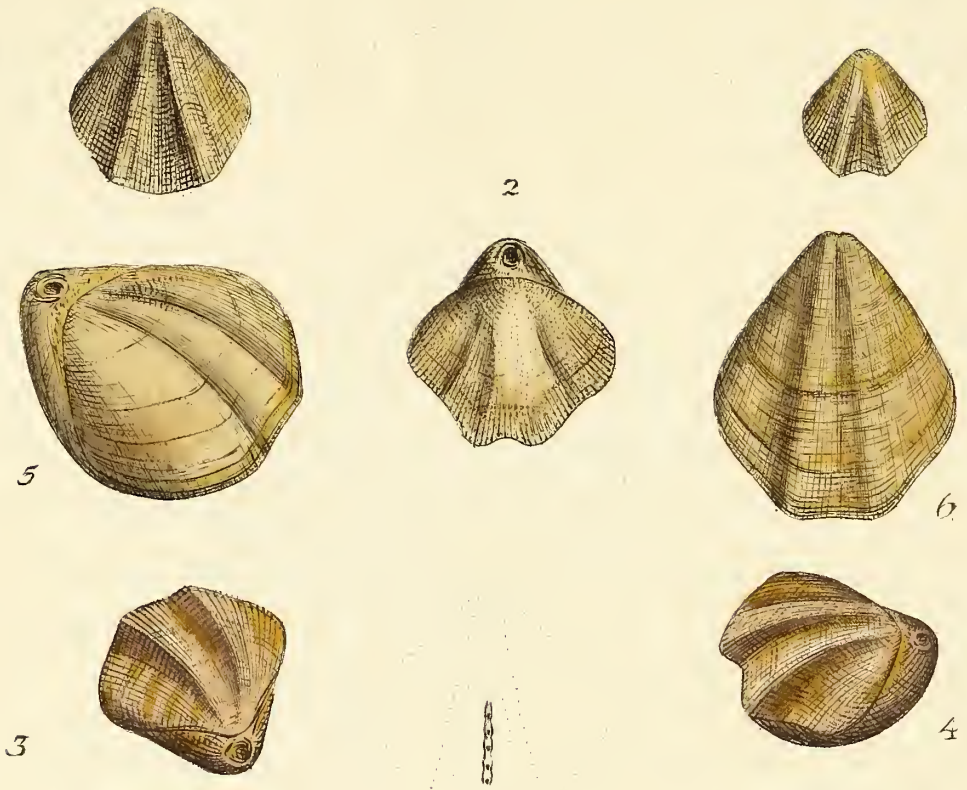
TAB. CCCXI.

Spec. Char. Lenticular, with a narrow front, radiated; volutions exposed; radii dissimilar, terminating in small tubercles, principal radii furnished with two tubercles near their commencement.

A very flat shell, bordered by two rows of tubercles that terminate the radii upon the edges of a flat front: the longer radii have each a tubercle at the commencement and another at about one-third their length, where they divide and alternate with shorter radii: they are all arched and rather acute; the aperture is elliptical, rather more than one-third as wide as long.

A very elegantly marked Ammonite; the specimen retains part of its pearly shell with the coat over it: some of its volutions are filled with Carbonate of Lime, others with Iron Pyrites. Dr. W. E. Leach kindly presented it to me some years ago: I suspect it was found in the clay above the Kelloways Rock.

This elegant shell I have named after one of my oldest Oxford friends, Dr. George Williams, Regius Professor of Botany, an assiduous lover of science and every good, a commemoration which will, I have no doubt, gratify many, who, when thinking of him, will feel as I do a reviving pleasure and esteem.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TEREBRATULA coarctata.

TAB. CCCXII.—*Figs.* 1 *to* 4.

Spec. Char. Subheptagonal, gibbose, hispid, and decussated; lesser valve convex, subtrilobated; larger valve biplicated, with a deep angular sulcus between the plaits.

Syn. Terebratulites coarctatus. *Parkinson Org. Rem. III.* 229.

Terebratula reticulata. *Smith Strat. Syst.* 83. *Strata identified.* 30. *fig.* 10.

Perhaps it would be more correct to describe this shell as five than as seven-sided, two of the sides being generally very small and convex: the length is rendered greater than the width by the projecting beak: the two plaits or ridges upon the larger valve appear as if pinched up, whence the name: the minute bristles that render the surface hispid, are short, often tubular, and are situated upon the angles of intersection of the two sets of lines, of which the longitudinal are elevated and cut by the transverse.

This is characteristic of the clay upon the Great or Bath Oolite; I have received it from C. W. Loscombe, Esq. and other friends from Hinton, near Bath, &c. Supposing this to be T. coarctatus of Parkinson, I have retained that name for it, and applied Smith's name *reticulata* to the following, which he either did not know, or did not think to be a distinct species. It is figured by Walcott in his Petrefactions found near Bath, No. 28; his specimens are from Hampton Down.

TEREBRATULA reticulata.

TAB. CCCXII.—*Figs. 5 and 6.*

Spec. Char. Obovate, gibbose, subhispid, decussated; front obscurely 3-sided; lesser valve convex; larger valve obtusely biplicated, with a shallow channel between the ridges.

Terebratula reticulata? *Smith.*

The general form of this is much rounder than of the last: the ridges are not much elevated, and the spines hardly rise above the surface, but appear as if pressed into it; it is also a larger species.

Found in stone excavated for the alteration and improvement of the Road between Nunney and Frome, by my kind Friend the Rev. John Ireland who first pointed it out as distinct.

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PINNA. *Linn.*

Spec. Char. A longitudinal, equalvalved, cuneiform, bivalve, open at the larger end; hinge lateral, without teeth, with a marginal, partly internal, linear cartilage. Animal attached by a byssus. Muscular impression nearly central.

As there is no danger of confounding any other genus with Pinna, no difficulty will occur on that head, but the distinction of the species is by no means easy, they so nearly resemble each other in form. It is one of those perfectly natural and insulated Linnean genera in which it has been found needless to form any division. The general form is an acute isoceles triangle, with the shorter side rounded and gaping, and the acute angle sometimes truncated: it is described by Linneus as *subbivalvis* in consequence of the close connexion of the valves by the linear cartilage, a connexion rendered so close often by being on the hollow side, as to prevent all motion of the valves, which in one species even (P. saccata) sometimes grow together at the opposite edges. The fibrous structure of the outer coat, which extends far beyond the inner pearly one, has become in a manner proverbial; but the outer coat of other shells, even univalves, is generally composed of perpendicular fibres, although not often of so coarse or loose a texture, and seldom extending far beyond the inner laminated compact or pearly coats. In the genus Perna, however, this structure is more remarkable from the length of the fibres.

PINNA tetragona.

TAB. CCCXIII.—*Fig.* 1.

Spec. Char. Narrow, smooth, or obscurely ribbed, prismatic; valves longitudinally carinated with a suture in the middle.

Syn. Pinna tetragona. *Brocchi, II.* 589.
P. subquadrivalvis? *Lam. Hist. Nat. VI.* 134.

About twice as long as wide, with many slightly elevated ridges chiefly placed above the suture; section nearly square, but variable.

The imperfections in the specimens described by

Brocchi and Lamarck (manifested by the remains being wholly pearly,) are still more extensive in the one before us, which is only an imperfect cast in sand mixed with a small portion of Mica, the carinated form of the valves may arise from pressure, since recent specimens are very apt to break in that direction, and almost every fossil Pinna has more or less of that form: hence the doubts that exist respecting the identity of the two species above quoted, neither of which is figured. The subject of my figure was sent me from Devizes by Mrs. Gent. I have another cast in sand probably of the same Pinna, from Sandfoot Castle, on the Isle of Wight, upon which some of the shell remains. I am indebted to Miss Benett for it.

PINNA affinis.
TAB. CCCXIII.—*Fig.* 2.

Spec. Char. Cuneiform, ventricose, straight, longitudinally ribbed, rather thick, smooth.

Nearly related to P. ingens, but shorter, smoother, and thicker: the ribs are small, but slightly elevated, and disappear near the edge opposed to the hinge: the length is not much greater than the width: a considerable portion of the shell is pearly.

Very abundant in the sandstone of the Bognor Rocks, where it is accompanied by an Anomia, similar to one commonly attached to the recent Pinna ingens. It has also been found at Highgate in Septaria composed of sandy Marle. I suspect Lamarck's P. margaritacea may be the same species deprived of its fibrous coat.

PINNA arcuata.
TAB. CCCXIII.—*Fig.* 3.

Spec. Char. Nearly equilateral, ventricose, finely ribbed, arched.

Nearly as deep as long; the hinge line is gently curved; the opposite edge much arched; in other respects this strongly resembles the last.

Having several specimens of this arched Pinna from Highgate exactly alike, as well in curvature as size, I cannot but consider it a distinct species: it appears to be quite different from P. incurva of Linn.: it occurs in Septaria.

AXINUS.

GEN. CHAR. A free equalvalved, transverse, bivalve; anterior side very short; posterior side produced, truncated, with a lunette near the beaks: hinge with a long oblique ligament placed in a furrow.

THE regular lunette, and the extremely short anterior side, with the hinge cartilage extended along almost the whole of its edge, seem to point out this as a distinct genus, and it is much to be regretted that there is very little probability of discovering the interior structure of the hinge, but I suspect it has no teeth. The shell appears to be thin, but I can trace neither the cicatrices of the muscles, nor of the edge of the mantle in the *angulatus*, which I consider the type of the genus.

The name,* and indeed the genus itself, cannot be considered as well established, until more is known respecting the shells included under it: a bad name is however better than none.

AXINUS angulatus.
TAB. CCCXV.

SPEC. CHAR. Obovate, subhexangular; posteriorly cuneiform, surface subbicarinated; beaks small, recurved.

A DEPRESSED shell, whose greatest length is nearly perpendicular to the hinge cartilage; the base (front) rounded terminated at each end by an angle from which two obtuse keels run up to the beaks; the anterior keel is sharpest, near to and almost parallel with the hinge: the posterior keel is very obtuse, from it to near the lunette the surface is almost flat, but just upon its border the shell rounds with an obtuse angle upon its edge: the lunette is impressed, ovate, pointed, and curved.

Found in the London Clay, near the White Conduit House at Islington; and by Mr. Gibbs in clay brought up from a well in the road from Vauxhall to Wandsworth, generally filled with Pyrites.

* Taken from the hatchet-like form of the posterior side.

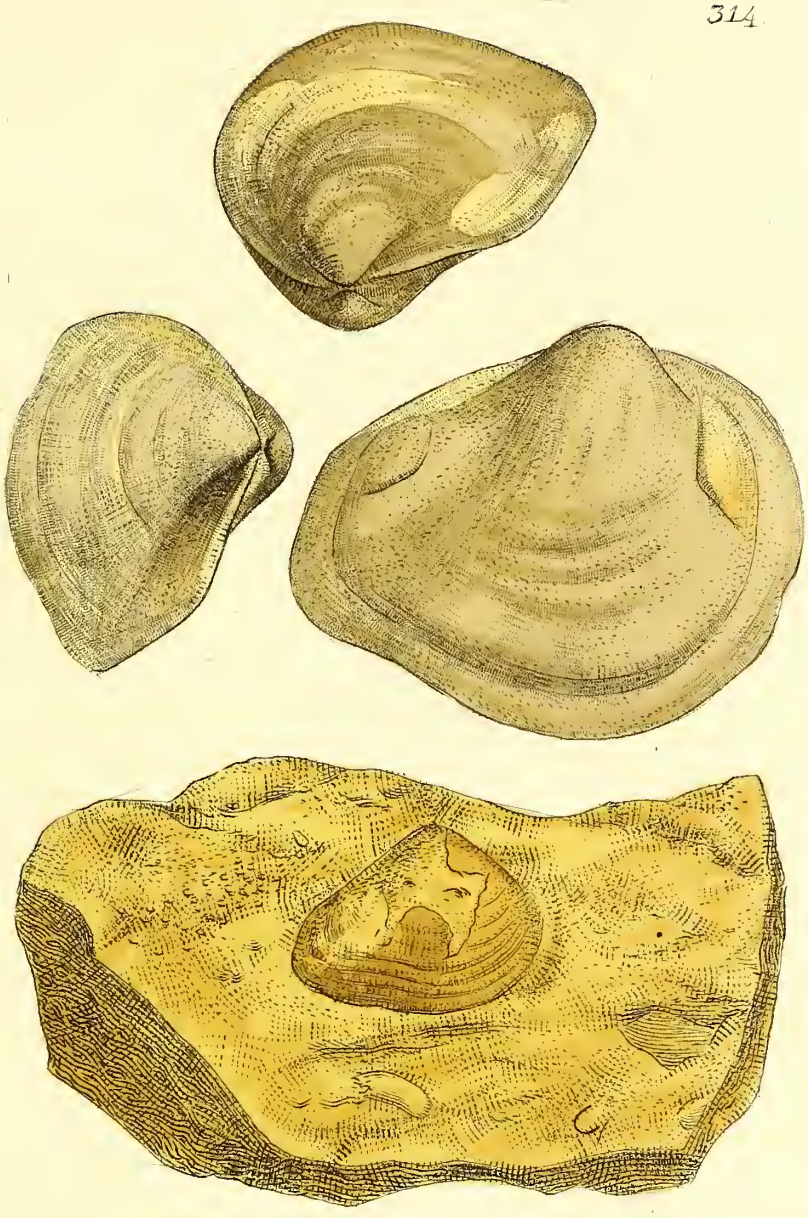
AXINUS obscurus.

TAB. CCCXIV.

SPEC. CHAR. Obovate, posteriorly cuneiform; anteriorly rounded; surface convex, with one obtuse keel; beaks large.

SOMEWHAT resembling the last in form, but not so wide, and having no angles upon the anterior end; as the specimens are all casts the lunette is not observable, but the impressions of the muscles and the edge of the mantle are strongly marked; the latter is entire.

This uncommon shell was brought to me by Mr. Farey, from Garforth Cliff quarry, near Leeds, where it was discovered by Wm. Smithson, Esq. and also from Selby, eight miles distant, supposed to be out of the Magnesian Limestone, a rock but sparingly supplied with fossil shells. The cast enclosed in the mass of stone (see the lowest figure,) may possibly be another species, but it is too imperfect to decide upon. Mr. Farey found it by the road-side one mile N. W. of Pontefract, in a stratum 6 or 8 inches thick, probably similar to another at Westbridge Hill; it has part of the shell remaining upon it.



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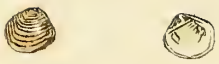

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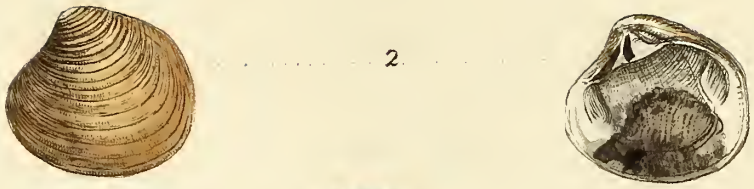

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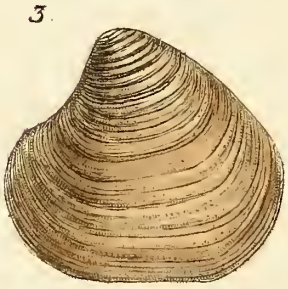

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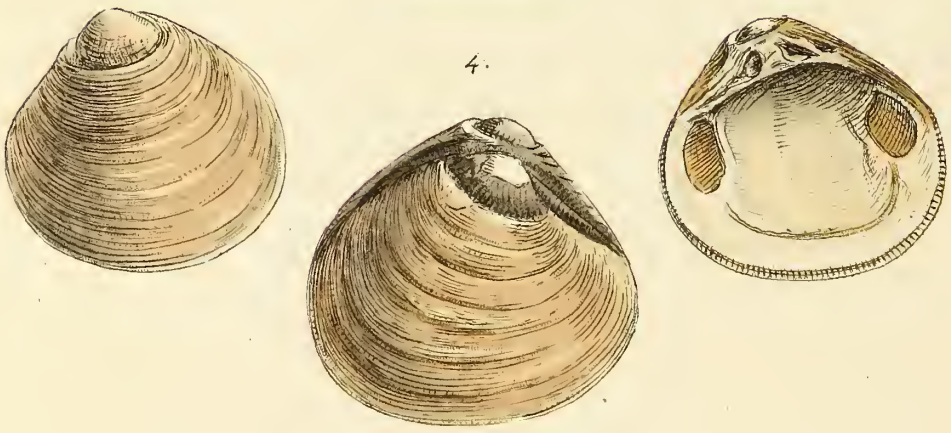


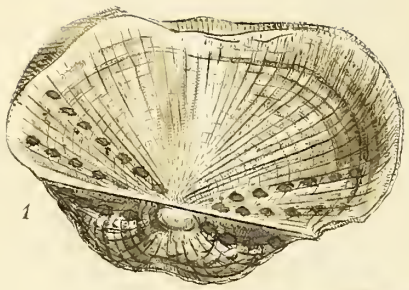
ASTARTE rugatus.

TAB. CCCXVI.

Spec. Char. Obovate, anteriorly subtruncated, when young transversely costated, afterwards slightly wrinkled; edge internally crenulated; lunette concave, obovate, pointed.

A rather gibbose shell, with a regularly concave short lunette; the costæ extend only a little beyond the beaks, and are often entirely lost by erosion, although the animal probably inhabited ancient seas, if we may judge from its analogy to A. Scotica, Danmoniensis, &c. to the latter it bears so strong a resemblance that it might easily be taken for it, were it not more gibbose and smoother, or rather, not regularly costated. Fig. 1 represents a young individual, the edge of which is not crenated, neither are there any crenulations upon the edges of those given at figures 2 and 3, but as they are chipped all round, it is possible that they may have been crenulated when perfect: the entire edge is the only character that distinguishes A. Scotica from Danmoniensis: I have doubts respecting its sufficiency, and in the present case am not inclined to admit the young shell with an entire edge to the rank of a species, since it exactly agrees with the marks upon the umbones of the larger shells.

Found at Highgate when the Archway was digging through the hill.



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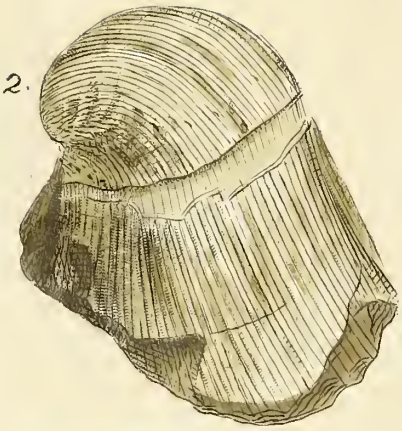

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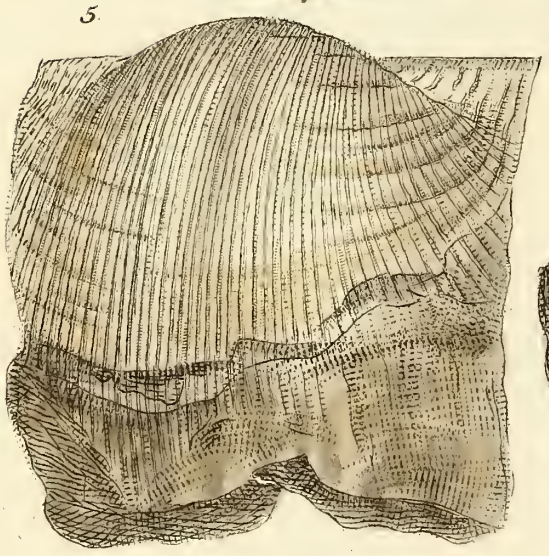

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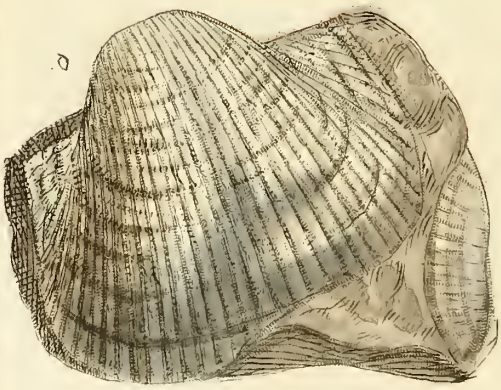

6.

PRODUCTUS Martini.

TAB. CCCXVII.—*Figs.* 2, 3, *and* 4.

Spec. Char. Semicylindrical, convex above, with a flattened front, deeply striated, spinous; lesser valve nearly flat, deeply inserted; hinge line equal to the width of the shell.

Syn. Anomites productus. *Martin Pet. Derb. tab.* 22. *f.* 1, 2, *and* 3.

This is the Productus spoken of at p. 158 of the first Vol. of this work; it is distinguished from every other by the width of its hinge, the neatness of its rather distant striæ, and the great length of its produced front: the ridges between the striæ are often furcated upon the front, where also all vestiges of spines in general disappear: very seldom are spines found in connexion with any part, but the casts shew the roots of spines scattered over the convex surface, and disposed in two rows upon each ear: the few spines I have met with are long and pointed.

Not uncommon in the Derbyshire Limestone. Fig. 4 represents a cast in ochracious sandstone, from the river Barn, in Yorkshire; favoured by Mr. Danby some years ago.

Fig. 3 is from a large, very concave, specimen, somewhat corrugated, and thus intermediate between P. Martini and the following.

PRODUCTUS antiquatus.

TAB. CCCXVII.—*Figs.* 1, 5 *and* 6.

Spec. Char. Semicylindrical, short, very convex above, longitudinally sulcated and transversely corrugated, spinous; lesser valve nearly flat; hinge-line shorter than the width of the shell.

Syn. Annomites semistriatus? *Martin Pet. Derb. tab.* 32 *and* 33. *f*, 1, 2, 3, *and* 4.

Distinguished from the last by its less regular striæ, and in being corrugated; the sides near the hinge are particularly rugged; it is in general also a larger and shorter shell.

The specimen fig. 5. is from Cloghran in the county of Dublin, and was given me by Mr. Joseph Humphreys. Fig. 6 is from Derbyshire, through the kindness of the late Mr. Salt; it is by no means an uncommon shell in the Mountain Limestone. I have quoted Martin's figures with a doubt, because my specimens are not enough reticulated to agree with them, though they are probably only varieties of his semireticulatus.

PRODUCTUS concinnus.

TAB. CCCXVIII.—*Fig.* 1.

SPEC. CHAR. Semicylindrical, convex above, with a concave front and narrow back, neatly striated and spinous; lesser valve flat, deeply inserted.

A POLISHED, thin, evenly made shell, much resembling P. Martini, but smaller and smoother.

Found in very dark brown Limestone in Derbyshire and near Richmond in Yorkshire. The flat space around the edge of the lower valve occurs also in P. Martini, as Mr. Martin's excellent figure shews, but it does not appear to be constant.

PRODUCTUS lobatus.

TAB. CCCXVIII.—*Figs.* 2 *to* 6.

SPEC. CHAR. Bilobed, very convex, furrowed, and spinous; spines few.

IN general form much like P. Martini, but divided into two lobes by a deep cavity along the front extending to the beak: the sulci or deep striæ are few, and the hinge as long as the shell is wide, which is seldom three-quarters of an inch.

Fig. 2 exhibits two views of a specimen, in which the shell is almost rotten: it is from the same locality as the following.

Figs. 3 and 4 are remarkably elongated: they are from a kind of Marle, probably decomposed Limestone, that occurs in Well Houses farm, belonging to the Rt. Hon. and Rev. Lord Charles Annesly, at his seat called Little Park Tower, in Northumberland, and are accompanied by P. Concinnus.

Fig. 5 is in Limestone; it was collected by Dr. W. E. Leach on the Island of Arran.

Fig. 6 is from a cast in Sandstone, and shews the bases of four spines very regularly placed: it is from Cumberland.

I have this species also from Derbyshire.

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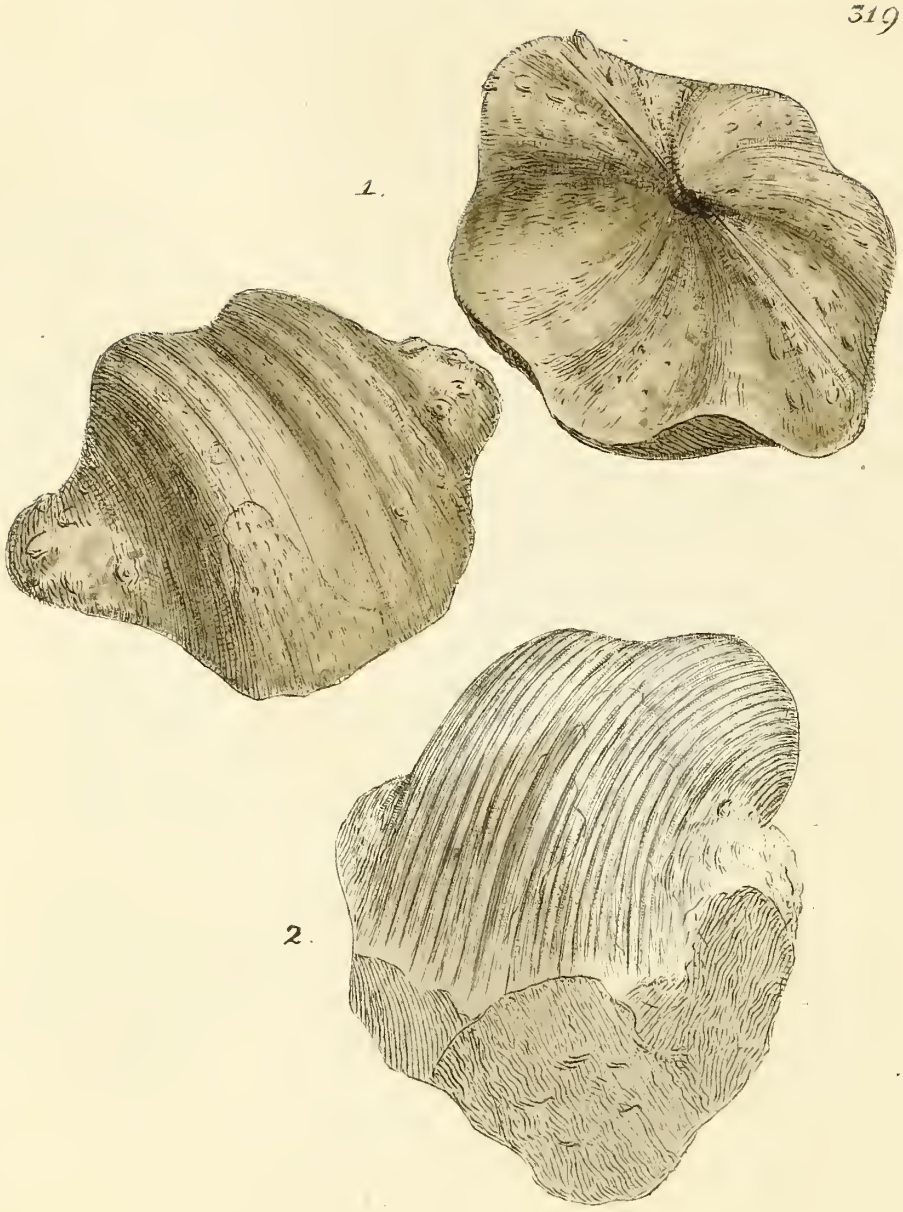
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PRODUCTUS horridus.

TAB. CCCXIX.—*Fig.* 1.

SPEC. CHAR. Quadrangular, with a large furrow along the middle, eared, thorny; ears prominent, subcylindrical; beak much incurved, large.

THE spines are scattered all over the surface upon obscure ridges, are large and rather numerous, those upon the ears are placed in rows and are particularly strong: the surface of the larger valve is so much curved, that the ears appear to project from the middle of the sides; they are rather large, convex above and concave beneath; both sides have spines; the lesser valve is very concave.

Not very rare in Derbyshire, communicated by Mr. White Watson, from the seventh bed of his first Limestone, probably Magnesian, as it is above the Coal series.

PRODUCTUS sulcatus.

TAB. CCCXIX.—*Fig.* 2.

SPEC. CHAR. Semicylindrical, short, convex above, with a concave space along the middle; spinose? coarsely sulcated; hinge line as long as the shell is wide.

THE concave space along the middle, and the distance of the furrows from each other, distinguish this from

P. antiquatus,* tab. 317: the remains of spines are so obscure that, except upon the ears, their existence is doubtful.

The only individual I have met with of this species was given me by the late Mr. Jonathan Salt: it is from Derbyshire.

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* By some mistake the reference to Martin's Synonym is given "semistriatus" instead of "semireticulatus."

PRODUCTUS giganteus.

TAB. CCCXX.

Spec. Char. Transversely oblong, with dilated sides, and rugose irregular striæ, longitudinally undulated; larger valve gibbose.

Syn. Conch. Anomites giganteus. *Martin Pet. Derb. tab.* 15.

Measuring from the edge to the highest part of the gibbose valve the length is equal to the width, but from the front to the hinge it is much less: the expanded sides do not form distinct ears, but are rather pointed: there is in general a more prominent elevation near the front, otherways the undulations are very irregular, and often branched: the striæ are extremely irregular, much branched, and inosculated: they are numerous. The cast of the interior is very remarkable, but not so striking as that exhibited in the next plate, which it somewhat resembles.

Two views of a Derbyshire specimen given me by Mr. Martin are represented upon this plate; it is accompanied by P. Martini. I have the same species from Yorkshire.

PRODUCTUS personatus.

TAB. CCCXXI.

SPEC. CHAR. Hemispherical, irregularly striated, beneath very concave; within the larger valve are three deep cavities, one connected with the beak, and two remote.

FROM the impressions of the cavities, which become protuberances, the cast of the larger valve has the appearance of a bird's head; the remote ones are not very prominent, but are large; that about the beak is divided into three lobes, of which the lateral ones are striated, and the central one is connected with the remote protuberances by a ridge. The surface was probably covered with small spines, but this is not well ascertained.

Such is the resemblance of this shell to a face, that the name personatus was thought apposite; when less completely deprived of the shell than the specimen figured, there remain numerous small elevations which are probably the bases of spines, these have been taken for the roots of feathers, and so strong a resemblance was then found to an owl's head, that the owner of a large specimen, which he brought to shew me, would hardly be persuaded that it could be any thing else. This specimen was found in Derbyshire: the figure is taken from one picked up near Kendal.

PRODUCTUS humerosus.

TAB. CCCXXII.

SPEC. CHAR. Oblong, squareish, depressed, striated, spinose? or hispid? hinge line less than the width of the valve; in the larger valve are two very deep cavities near the beak, and a third connected with the beak; front flattish.

As no other indications of this species than casts remain, the existence of spines and striæ upon it, can only be inferred from the punctums which are arranged in irregular rows upon the cast of the larger valve: the protuberances that correspond to those cavities which are distant from the beak, are blunt cones; while that which filled the beak is obscurely divided into four lobes, and bears a slight resemblance to a head between two high shoulders, as the name implies. The length rather exceeds the width.

From Breden, near Derby, by favour of the lamented S. Tennant, Esq.; the same specimen is figured in my British Mineralogy, tab. 217, as an example of Magnesian Limestone in which it occurs.

PRODUCTUS punctatus.

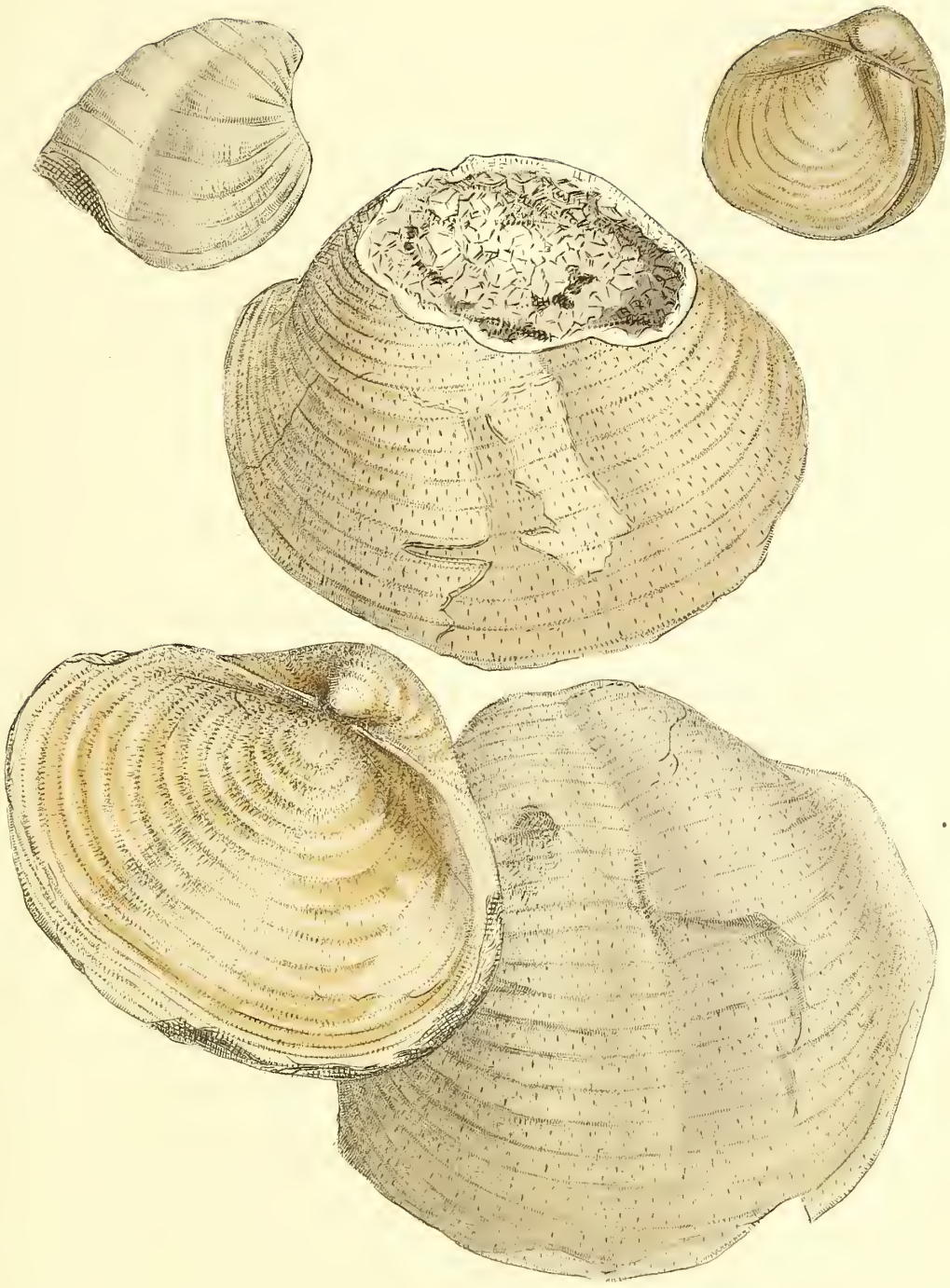
TAB. CCCXXIII.

SPEC. CHAR. Transversely obovate, gibbose, depressed in the middle, hispid; surface composed of concentric imbricated laminæ; lesser valve nearly flat.

SYN. Conch. Anomites punctatus. *Martin Pet. Derb. tab.* 37. *f.* 6, 7, *and* 8.

A SHORT hinge line, and a beak not very prominent, give this Productus a regularly obovate outline. The cast appears transversely striated and minutely punctated: the striæ are above a line apart, and are very regular: the punctums are impressed except when a portion of the shell remains, and then they are elevated: it is only when the whole thickness of the shell exists, that the real nature of it can be ascertained: it is then found to consist of laminæ placed at regular distances, and pressed close upon each other: the surface is hispid. but the bristles appear to be very short.

This is found in the Mountain Limestone of Derbyshire, and often contains Bitumen, crystals of Carbonate of Lime, &c. My good friend, S. Wright, Esq. of Cork, has sent me specimens from the Black Rock in his county, where they are in common with other fossils much distorted, as if they had been, along with the stone, reduced to a soft state and then bent about: in this rock, too, the shells are more incorporated with the stone, and their small parts less distinct.



TEREBRATULA acuminata.

TAB. CCCXXIV.—*Fig.* 1.

SPEC. CHAR. Heartshaped, front much elevated, with a deep acute-angular sinus in the margin; surface finely striated.

SYN. Conch. Anomites acuminatus. *Martin Pet. Derb. tab.* 32 *and* 33. *f.* 5, 6, 7, *and* 8.

A RATHER gibbose shell; the front is so much elevated, that the upper valve is nearly divided into two distinct ovate lobes: the beaks are very small, and the numerous striæ inconspicuous.

Found on Scaliber, near Settle in Yorkshire, in Derbyshire, and in the Black Rock near Cork, from which latter place S. Wright, Esq. has favoured me with specimens. It strongly resembles the Terebratula, fig. 1, in plate 246, of the Encyclopédie Méthodique, but is not so strongly striated. This is named T. spirifera by Lamarck in his Hist. Nat. des Animaux sans Vertèbres, VI. p. 257. but I suspect he has confounded it with Spirifer cuspidatus.

TEREBRATULA affinis.

TAB. CCCXXIV.—*Fig.* 2.

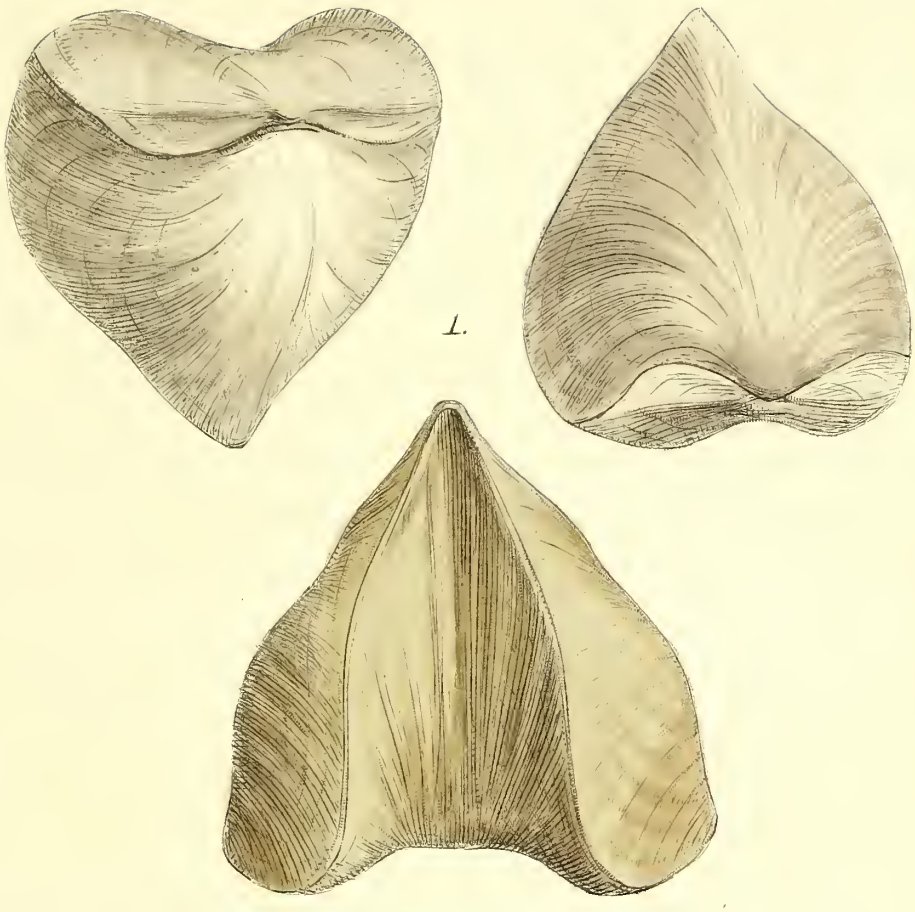
SPEC. CHAR. Orbicular, strongly striated; upper valve gibbose, with an elevated sinus in the front, lower valve nearly flat.

HINGE line rather straight, almost equal to the width of the shell in length: the sinus in the front is obtuse, filled with a tongue-shaped elevation of the lower valve: the striæ are deep and very regular.

The strong resemblance this bears to the recent Terebratula dorsata of Lamarck, &c. (Anomia dorsata Auct.) makes it at first sight to be taken for it, especially if figures alone are consulted; but the great inequality of the valves is a sufficient distinction.

The specimens are from near Horncastle, and appear to be from decomposing Mountain Limestone; they were given to me by Mr. G. Weir.

Smaller ones have also been sent me from the Malvern Hills by Miss Molesworth, and from Dudley by Mr. Ryan.



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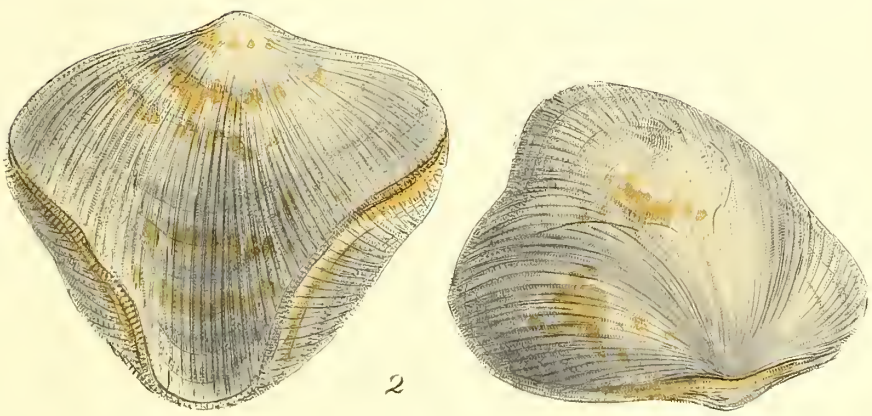

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TEREBRATULA resupinata.

TAB. CCCXXV.

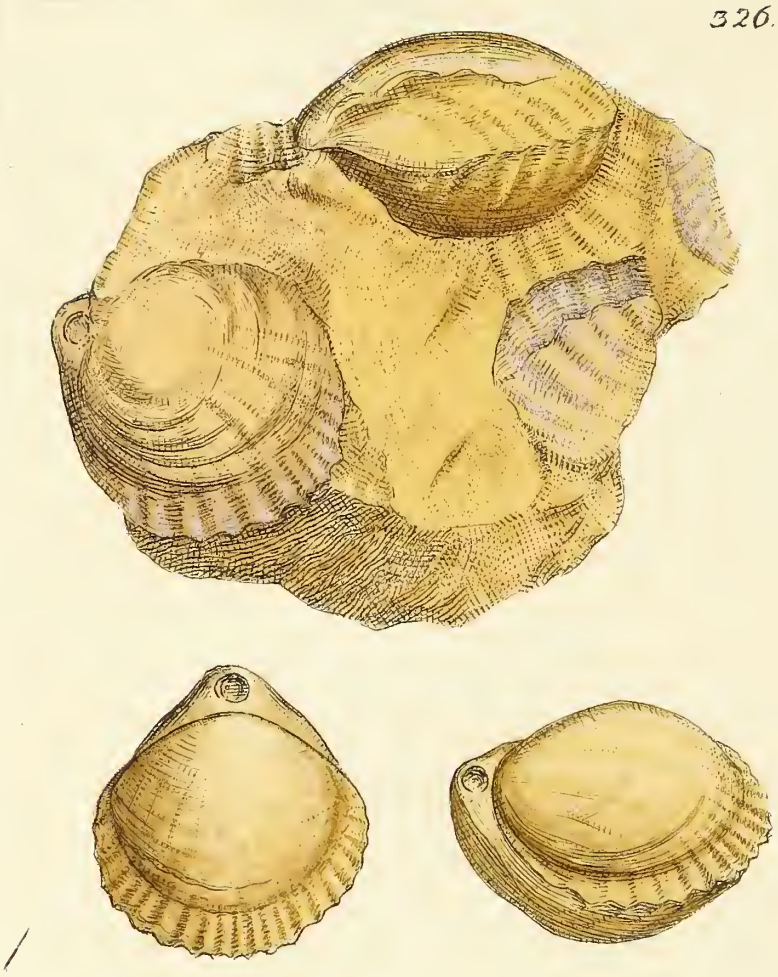
SPEC. CHAR. Transversely ovate, longitudinally striated; striæ minute, numerous, and equal; imperforate valve most convex.

SYN. Conch. Anomites resupinatus. *Martin Pet. Derb. tab.* 49. *f.* 13 *and* 14.

LENGTH about two-thirds the width: the hinge line is not very long, but it is straight, and accompanied by two nearly flat surfaces, perpendicular to each other, between it and the beaks; that beneath the prominent beak of the flatter valve has a triangular foramen in the middle of it. The little ridges between the striæ are often interrupted by punctums that appear to be the bases of slender depressed spines: the middle of the more convex valve is slightly concave.

I have met with several hollow specimens of this shell, but have seen no vestige of a spiral cartilage in any; nor does it appear that either of the beaks has a circular perforation. The form of the hinge strongly resembles that of the genus Spirifer, but is not incompatible with that of Terebratula, with which at present this species must remain.

Not very rare in the Mountain Limestone of Derbyshire.



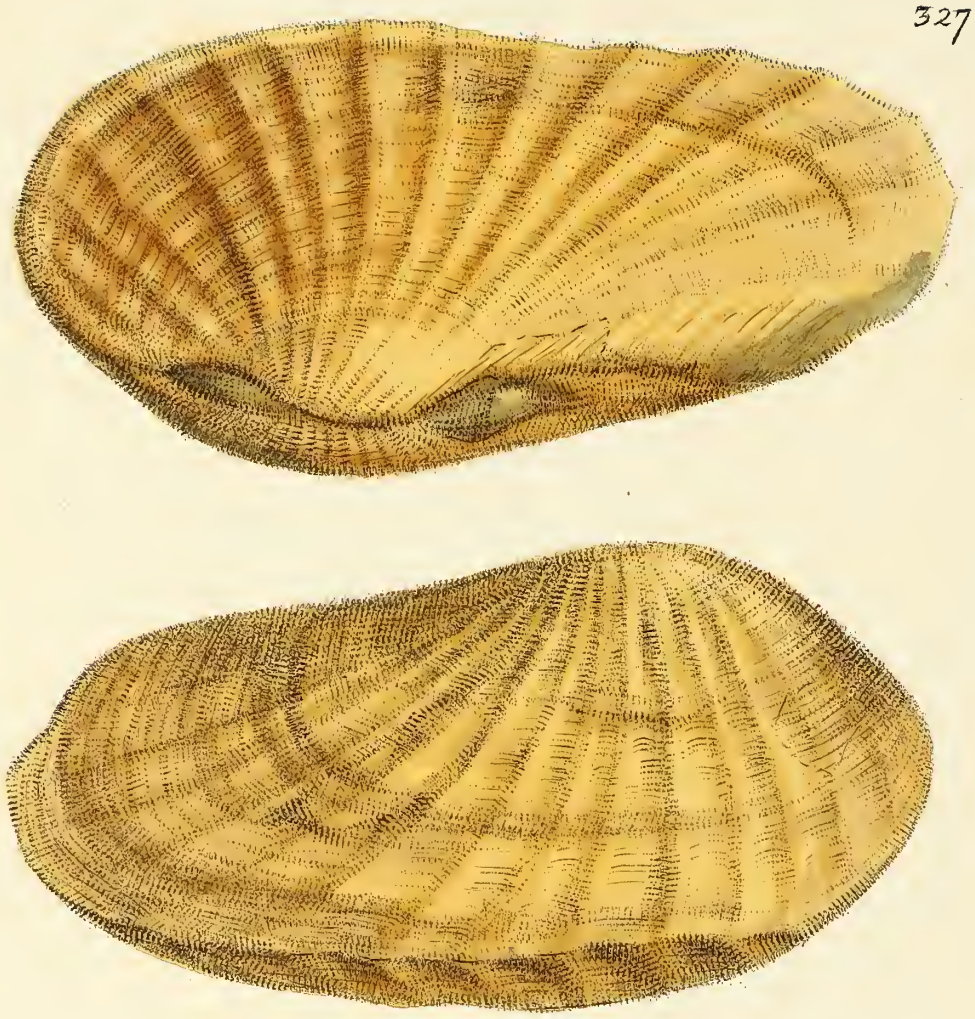
TEREBRATULA Fimbria.

TAB. CCCXXVI.

Spec. Char. Orbicular, gibbose; margin undulato-plicated.

Full grown shells of this species are more orbicular than young ones, which are rather quadrangular, and not so gibbose: the plaited margin or frill occupies about a fifth part of the diameter of the shell, and is partially separated from the remaining smooth part by a sudden elevation.

Found in fine grained Limestone, at Charlton Kings, in Glostershire, and at Cleeve Hill, near Cheltenham; from the former locality it was sent me by Mr. Richard Taylor, and from the latter by Miss E. Warne.



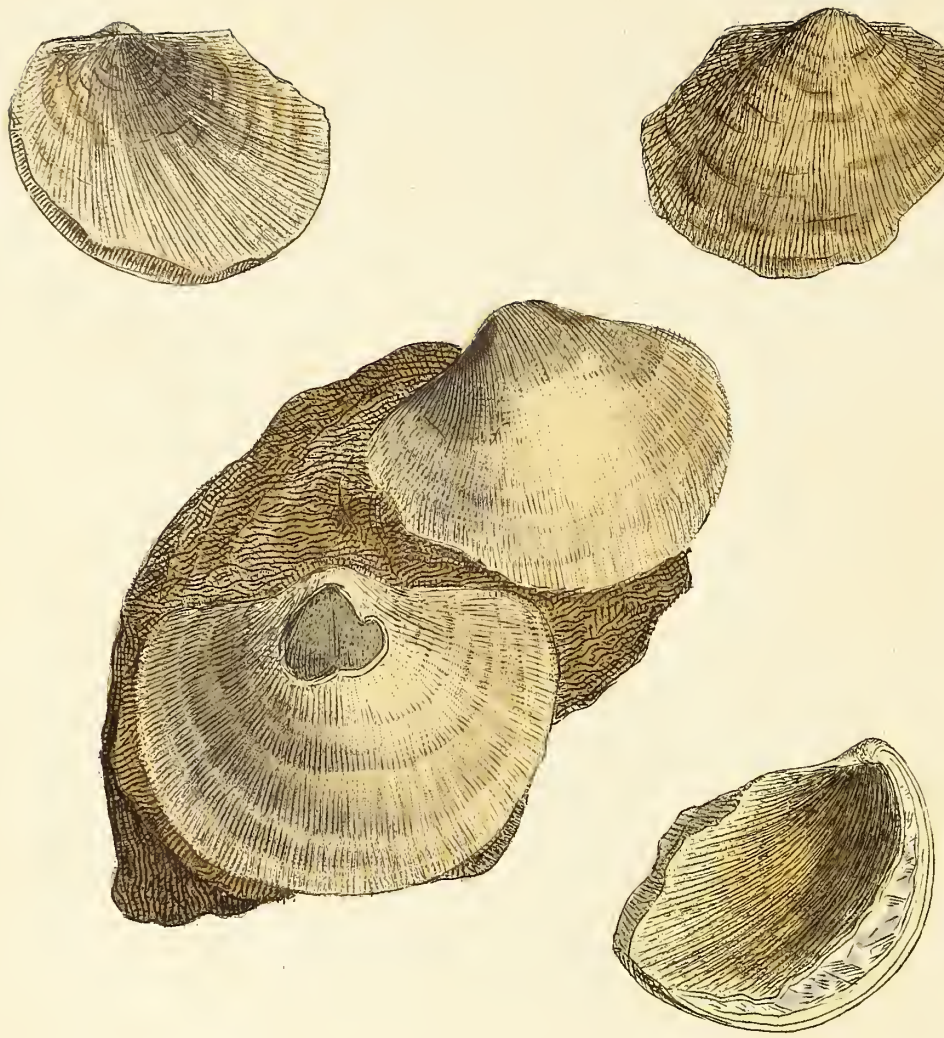
LUTRARIA angustata.

TAB. CCCXXVII.

Spec. Char. Transversely elongated, costated, gibbose, anteriorly rather compressed; costæ oblique, numerous, acute.

Costæ about twelve; carina-formed; the surface is rendered rugged by rather deep irregular transverse striæ, and intermediate ridges: it does not appear that either side is gaping; the posterior one is rounded, and extends a very little way from the beaks: the substance of the shell is thin, so that the carinæ are as conspicuous within it as outside.

From the cabinet of the Rev. John Ireland: found at Nunney, near Frome, in a calcarious gritstone: the shell still adheres to several parts of the specimen.



PRODUCTUS hemisphæricus.

TAB. CCCXXVIII.

Spec. Char. Hemispherical, longitudinally striated; striæ fine; lower valve very concave.

This Productus appears to be quite free from spines: it is much wider than long, and has a straight back as long nearly as the shell is wide: there is but a small space between the valves for the animal, because the lower one is very concave: the sides are slightly corrugated, otherways the general contour is characteristically regular.

The larger specimen is from some part of Wales, by favour of my kind friend Dr. Williams, Reg. Prof. and the others from Mynidd Careg, near Kidwelly, in Carmarthenshire, through the kindness of Mr. Richard Taylor. They are both from Mountain Limestone, as I believe the whole genus is.

PRODUCTUS comoides.

TAB. CCCXXIX.

Spec. Char. Semicircular, gibbose, very finely striated; disk inflated; back staight, extending the whole width of the shell.

The fineness of the striæ, and form of this shell together, give it the contour of a smoothly combed head of

hair. The back is remarkable for a flat space between the beaks, not generally observable in this genus. The surface has several large longitudinal furrows, without regularity, and excepting the fine close striæ, is smooth. The shell is very thick, and rough within.

Collected by Mr. Farey, in the Wayboards between the Limestone, under the Coal, at Llangaveni in Anglesea: it is accompanied by small Trilobites imbedded in a kind of Shale.

PRODUCTUS latissimus.

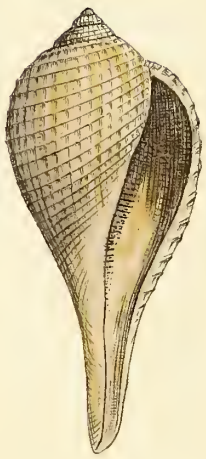
TAB. CCCXXX.

Spec. Char. Transversely oblong, depressed, coarsely striated; beak much incurved; hinge line very long.

The long hinge line, partly concealed by the beak, and the coarse pattern upon the surface, distinguish this from the last: the shell also appears to be thinner, and the space between the beaks is much narrower.

Found in a Cherty Limestone, at Tyddmawr Farm in Anglesea, by Mr. Farey. The shell is in many parts gone, and its place supplied by Silex in numerous small drops, each surrounded by several irregular rings of the same material, a form of Silex not rare among fossil remains of shells composed of laminæ strongly impregnated with gluten, as Ostrea Pectens, &c. in the green sand and other formations, and lately met with, forming hollow tuberose masses that fall out of decomposing Limestone in Devonshire.

The upper figure is from a neat little specimen brought from Puffin's Island, N. of Anglesea, by Samuel Hawkes jun. Esq. The shell upon it is entire.



PYRULA. *Lamarck.*

Gen. Char. A pyriform univalve; beak an elongated canal; spire short without variciform sutures; columella plain, lip entire.

An extremely short spire, almost enveloped in a ventricose body, the lower part of which is produced, characterizes this genus, and distinguishes it from Fusus. From those species of Turbinellus that resemble Pyrula in form, it is distinguished by the plain columella and adpressed inner lip.

Shell collectors and dealers, a class of amateurs who often perceive natural affinities, are in the habit of classing several species of this genus under the common appellation of Figs.

The recent species are inhabitants of the sea in warm climates.

PYRULA nexilis.

TAB. CCCXXXI.

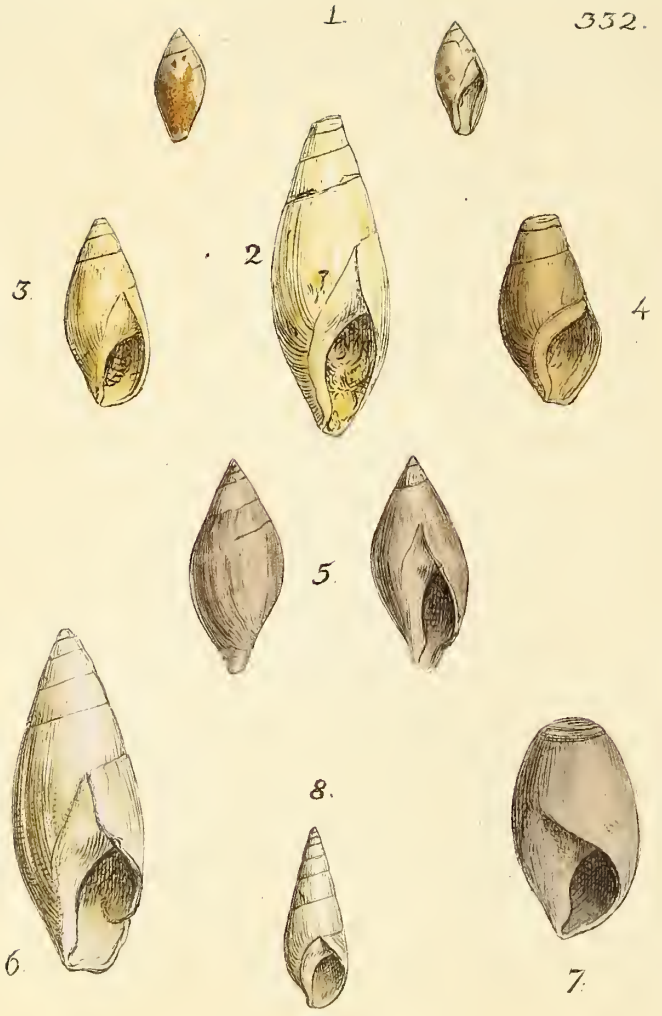
Spec. Char. Obovate, clavate, with decussating elevated striæ; transverse striæ uniform, most prominent; spire slightly produced.

Syn. Murex nexilis. *Brander*, 55.
Pyrula nexilis. *Lamarck Env. de Paris* 67.

Although strongly resembling the Bulla Ficus of Linnæus, it is readily distinguished by the prominent

spire, as Solander has well observed in Brander's Hampshire Fossils : the striæ are also much less numerous, and bear a stronger resemblance to a net enclosing the shell ; and the aperture rather more suddenly contracted into the beak.

A well known, and when perfect, much prized shell found at Barton, and also at Grignon. I am indebted to Miss Teed, Miss Beminster, and other friends, for examples.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MELANOPSIS. *Lamarck.*

GEN. CHAR. Univalve, subfusiform or turrited; mouth oval, pointed above, emarginate below; outer lip sharp edged, entire, upper part pressed against the spire; inner lip thick, tumid above; columella plain, acute, curved; operculum coriacious.

A GENUS of Fresh water shells lately established, and of which there are several recent species; the lower part of the mouth in some of them is produced into a very short beak, and in all it is more or less dilated; the epidermis is rather thick smooth, and generally of a blackish green colour, as in most fresh water genera; the animal closes the mouth of its shell with a coriacious operculum, that increases from a point situated near the lower part of its inner edge; it is rather partial to temperate climates.

MELANOPSIS fusiformis.

TAB. CCCXXXII.—*Figs.* 1 *to* 7.

SPEC. CHAR. Fusiform, in the middle subcylindrical, smooth; mouth half the length of the shell.

THIS species is liable to considerable variation in length, some specimens being much elongated, others ovate and pointed. The shorter ones have most of the subcylindrical form of Ancilla, and also a slight sinus towards the upper part of the outer lip, where it is applied to the opposed callus, which is largest in such individuals. Since there is a series of these forms found in the same place, and as the mouth is constantly half as long as the

shell, they cannot be considered two species. It differs from M. buccinoides in the form of the mouth which is narrower in the lower part, being equally elongated with the spire, and in the subcylindrical form of the middle portion. The striæ of growth are more or less conspicuous, but in general they are obscure, and the surface highly polished with much of the aspect of an internal marine shell.

Foreign Collectors have confounded this with Melanopsis buccinoides, a shell that lives in the rivers between Tyre and Sidon, and is indeed very similar. The shell mentioned by Mr. Webster in the Second Volume of the Transactions of the Geological Society, as occurring in the upper marine formation on the Isle of Wight, and at Woolwich, and called by Mr. Parkinson, Ancilla buccinoides, appears to be the one before us: imperfect specimens of it might easily be mistaken for Ancilla, to which the spire and even the callus in the mouth bear a strong resemblance; and more especially at a time when the Genus Melanopsis had not been pointed out. It was moreover found in the vicinity of Marine shells, even of Ancilla subulata. The Melanopsis fusiformis is one of those presumed fresh water shells that occur in the upper Marine formation only, and have produced a variety of opinions respecting it.

Figs. 1 and 2 represent the extremes of form selected from the Isle of Wight specimens collected by Prof. Sedgwick and Mr. G. B. Sowerby. —Fig. 3 was found at New Charlton by H. Goodhall Esq.—Fig. 4 is from Woolwich, picked up by the Rev. H. Steinhauer.—Fig. 5 represents one from New Cross near Deptford.—Figs. 6 and 7 are from Hordwell specimens, one of which is truncated in a way common to some land shells, but very extravagantly.

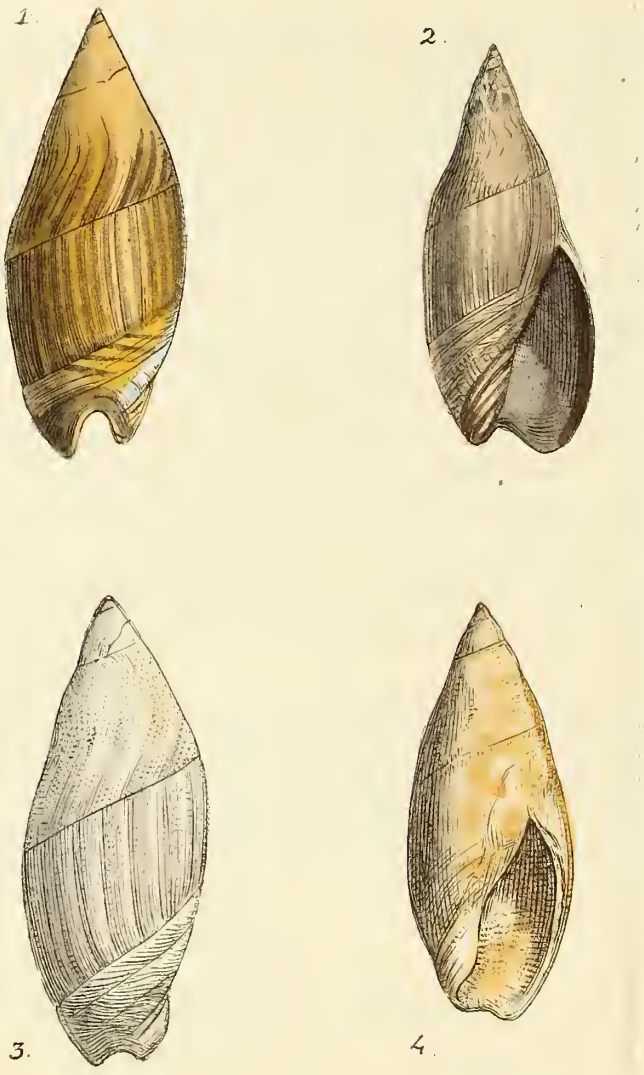
MELANOPSIS subulatus.

TAB. CCCXXXII.—*Fig.* 8.

SPEC. CHAR. Conical subulate, smooth; mouth ovate, one third the length of the shell.

THE mouth of this species is remarkably short, and extends but a little way up the spire, which has about seven whorls, and is above three times as long as wide, and much more produced than the base.

Found along with the last on the Isle of Wight, I have seen but one individual.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ANCILLA subulata.

TAB. CCCXXXIII.

Spec. Char. Subulate, smooth, and shining; spire and base polished; spire elongated, acute; the varix at the base of the columella striated.

Syn. Ancilla subulata. *Lam. env. de Paris.* 24.

An elongated, ovate, pointed shell, whose spire and base are wrapped (as in others of the Genus) in a shining case constructed like, and partly proceeding from the inner lip, the space between is faintly striated, the aperture is not remarkably open, the notch at its base is rather deep.

So nearly do A. buccinoides and subulata resemble each other, that it is sometimes difficult to decide to which species a certain individual may belong; in the specimens before us the spire is shorter than in most of the Grignon specimens of A. subulata, but it is longer and the last whorl is less ventricose than in the buccinoides, now as some of them appear to be shortened by wear, it seems right to refer them to the subulata.

In certain beds of the stratum of clay filled with fossil shells, commonly called the upper Marine stratum, in the Isle of Wight, are many shells by some supposed to have been inhabitants of fresh water, while in others are Oysters, Volutes, and numerous marine shells, amongst them is the Ancilla here described; it also occurs in perhaps

a part of the same stratum upon the opposite coast. The specimens figured 1 and 2 are from Bramble's Chine on the Isle of Wight, collected by Prof. Sedgwick of Cambridge. Fig. 3 is from one given me by Miss Beminster from near Christchurch. For fig. 4 I am indebted to Charles Lyell Esq. jun. the son of my Botanical Friend often mentioned in English Botany, who obtained it from a Brickiln at Lyndhurst in Hampshire. It is a scarce British shell.

TEREBRATULA? lineata.

TAB. CCCXXXIV.—*Figs.* 1 *and* 2.

Spec. Char. Transversely oval, gibbose; minutely striated longitudinally, and transversely sulcated; sulci distant; no sinus in the front.

Syn. Conch. Anomites lineatus, *Martin Pet. Derb. t.* 36, *f.* 3.

Shell nearly twice as wide as long, with incurved beaks neither of which is perforated, but in the confined space occupied by the hinge, there is an angular sinus. The longitudinal striæ are extremely minute and close, but the concentric furrows are conspicuous and rather remote.

Until the internal structure of this and the following shell is disclosed by some happily preserved specimens, we must remain uncertain of the proper genus top place them under; it is, however, clear that they are not true Terebratulæ: they are, very probably, Spirifers.

From the Metalliferous Limestone of Derbyshire.

TEREBRATULA? imbricata.

TAB. CCCXXXIV.—*Figs.* 3 *and* 4.

Spec. Char. Transversely oval, gibbose, imbricated; longitudinally sulcated; front slightly elevated; sulci obsolete.

Rather longer than the last; the surface is composed of about 12 sulcated laminæ lying close upon each other, with remote edges; the beaks are prominent incurved; the hinge line short, and the front very slightly sinuated.

Fig. 3 is taken from a Derbyshire Limestone specimen, and fig. 4 from one found at Settle in Yorkshire. This species has probably been confounded with the preceding by Martin.

SPHÆRA.

GEN. CHAR. A globose, eared, bivalve; with one central and two? remote teeth about the hinge.

EARS obtuse, short, incurved; the line of the hinge is long, slightly curved, and terminated at one, perhaps at both ends, by a flat obscure tooth beneath the commencement of the ear; in the centre of it, is a large irregular tooth, transversely flattened and turned towards the incurved beak; the sheil is thick and very gibbose.

Of this newly discovered Genus only one species has been found, and of that only one valve, therefore it is not known whether it be equalvalved or not: neither has the situation of the ligament, or impressions of the muscles been ascertained, the shell is so strongly cemented to the stone; it is thought convenient, however, to publish it for the purpose of inducing further research, and of supplying Geologists with a name for it, as it is a fossil characteristic of a stratum where shells are rare.

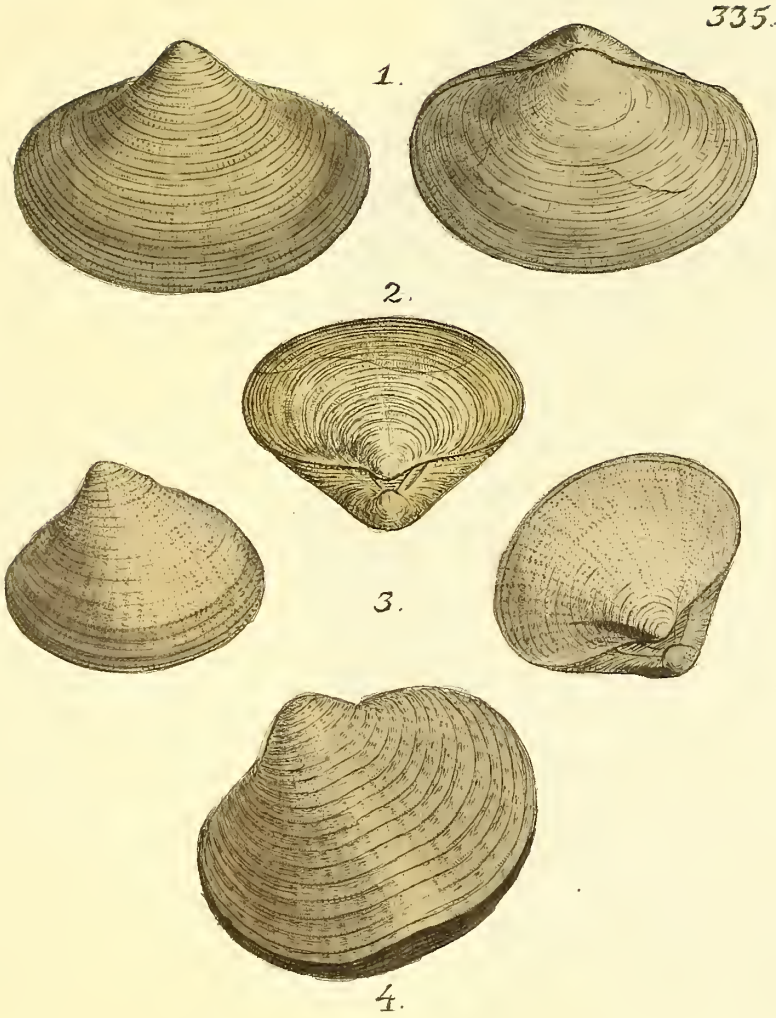
SPHÆRA corrugata.

TAB. CCCXXXV.

SPEC. CHAR. . . . . .

A VERY gibbose heavy shell, with a coarsely corrugated surface, rugæ transverse obtuse, largest about the sides, and extended over the ears, nearly lost in the middle.

Lately discovered by Professor Sedgwick in the Iron Sand formation, on the eastern side of Sanddown Bay, on the Isle of Wight, where the beds are inclined.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GRYPHÆA sinuata.

TAB. CCCXXXVI.

SPEC. CHAR. Suborbicular; one side cuneiform; beaks very small, laterally incurved; one valve convex, subcarinated; the other nearly flat, with a sinus above the angle of the cuneiform side; hinge pit marginal, long, narrow and curved.

THE bilobate form of the deeper valve, marks this shell as a Gryphæa, while its incurved, although small beaks, help to distinguish it further from Ostrea. The sinus between the beaks, and the angle of the cuneiform side is not very deep, and in the adult shell is nearly obliterated in the margin, but it is easily recognized by the lines of growth upon the surface near the beaks; when the specimen is not in a state to exhibit this character, the form of the hinge may help to discover the species.

This gigantic Gryphite grows half as long again as the figure. It seems to be peculiar to the Iron Sand Formation; it is found near Ashford, and upon the high range of hills bounding Romney Marsh, five miles from Hythe in Kent, as I learn by specimens sent me by A. Power, and H. Walker, Esqrs. of that County. I have also a large rather elongated specimen with remarkable bilobed

or furcated plicated Oysters adhering to it, from near Folkstone; and lately it has been discovered by Professor Sedgwick, in various stages of growth, in regular beds throughout the Iron Sand on the Isle of Wight, the best specimens were obtained in the Black Gang Chine, and Shanklin Chine about midway of the Cliff, associated with a furcate Cockscomb or plicated Oyster resembling that from Folkstone.

BULIMUS. *Scopoli, Lamarck, &c.*

GEN. CHAR. An univalved, subturreted, ovate or oblong shell; aperture longitudinal, entire, longer than wide, with the edge of the outer lip reflected when old; columella smooth, neither truncated nor expanded at the base; no operculum.

A GENUS of shells belonging to land animals, very closely allied to those of the genus Helix, and equally destitute of opercula; it is well distinguished by the longitudinal position of its entire aperture, the inner lip of which is closely applied to the columella, and the edge of the outer one, when fully formed, reflected; the want of an operculum is also of importance, but is not generally useful, because it is a negative character not easily proved.

The species are numerous, the warm climates supplying many large kinds, but the temperate chiefly small and even minute ones: there are several fossil species described by Lamarck as found near Paris.

The Bulimus roseus, a species 4 inches long, is said by Montfort to be excellent food.

BULMIMUS ellipticus.

TAB. CCCXXXVII.

SPEC. CHAR. Elliptical, elongated, rather obtuse, longitudinally ribbed; ribs numerous, very small, straight; aperture small, twice as long as wide, upon the left side.

REMARKABLE for the exact similarity in form of the two ends, and for the left-handed spire. It is three times as long as wide, rather obtuse at both ends, and perhaps umbilicated; the upper angle of the mouth is acute, the base rounded; the columella seems to be a little curved. Length sometimes nearly four inches; the ribs are but slightly elevated, and the space between them is concave.

From the fresh water formation at Schalcomb on the Isle of Wight, by favour of Js. Holloway and Prof. Sedgwick.

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POTAMIDES. *Brogniart.*

GEN. CHAR. A turreted, univalved shell; aperture nearly semicircular, without a canal in the upper angle, contracted at the base into a short slightly truncated beak; outer lip dilated; operculum corneous.

A GENUS so nearly allied to Cerithium that it is very difficult to distinguish it, nevertheless it is desirable so to do, since the shells composing it are inhabitants of fresh water, and have probably a structure suitable to the necessary difference in their economy. The principal differences hitherto noticed between the Genera are the following: Potamides has a corneous epidermis, and is frequently decollated or eroded; Cerithium has an extremely thin epidermis, if any, and is generally perfect; Potamides has a very short, not recurved beak, and has no well defined, reflected canal at the upper angle of the mouth, but sometimes a groove in the lip in place of it; Cerithium has a recurved beak, and often a distinct canal at the upper angle of the mouth, and generally the form of the aperture in Potamides is proportionally shorter than in Cerithium.

Although this genus was separated from Cerithium by Brogniart so long ago as in 1810, we were unwilling to adopt it for fossil species, until we came to examine Buccinum rigidum of Brander, when we were so much struck by its similarity to Potamides ater of Brogniart, that we were constrained to admit his genus. Could we with certainty determine fresh water or marsh shells among fossils, by inference from their association, we

might with less hesitation point out which of those at present called Cerites ought to be removed to Potamides, but the two genera are as likely to be mixed as the Oysters, Cyclades, Malanopses, Ancillæ, &c. that accompany them, in beds, between the two fresh water strata, on the Isle of Wight, or above the white Sand at Charlton, &c.

If the characters above mentioned could be relied upon, which we fear is not strictly the case as far as concerns the form of the mouth, the following species, published at tab. 147, should be arranged as Potamides, Cer. funiculatum, Cer. intermedium, Cer. dubium, and Cer. Melanioides; the two last have the best claim to removal; perhaps Cer. funatum, tab. 127, ought also to be removed; it appears to have a small groove or canal at the junction of the right lip with the spire, although hardly enough to be considered of importance; indeed such a groove is observable in some of the recent Potamides.

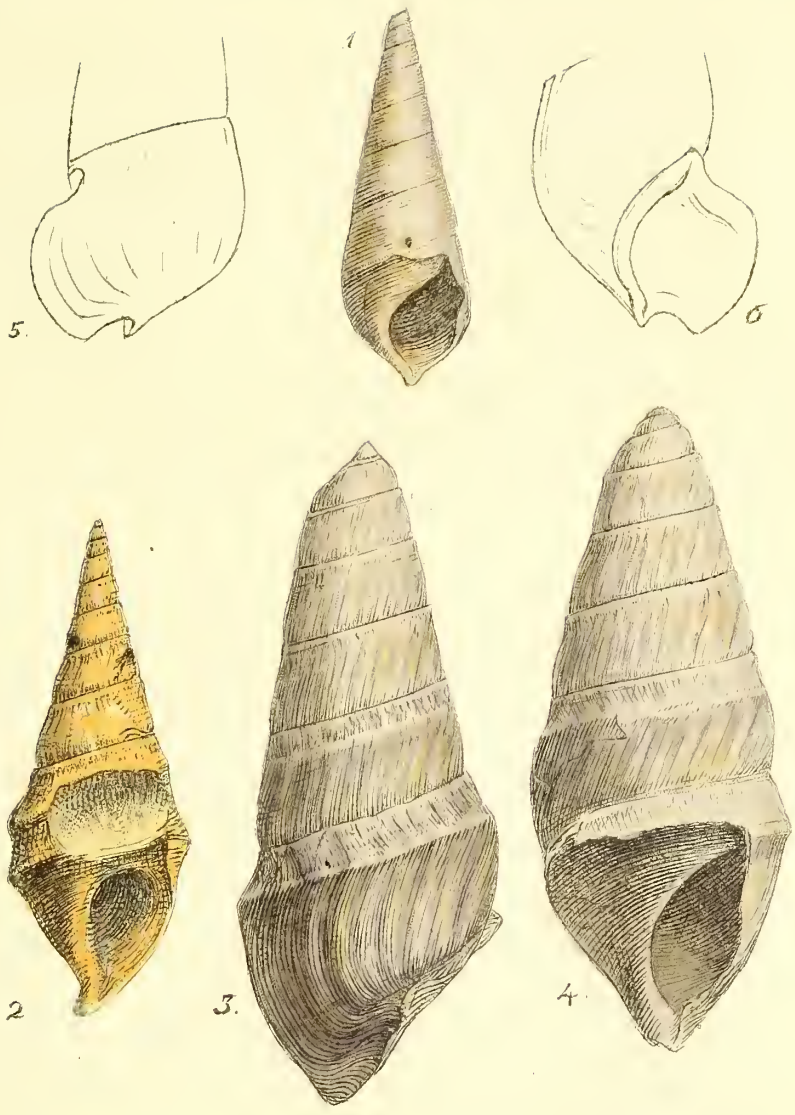
POTAMIDES rigidus.

TAB. CCCXXXVIII.

SPEC. CHAR. Subulato-conical, nearly smooth; lower whorls surrounded by a keel near their upper parts.

SYN. Buccinum rigidum. *Brander*, 43.

SOME obscure furrows indicating the lines of growth are observable regularly covering the otherways smooth surface of this shell: from the curvature of these lines, and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of others where the growth has been interrupted, we infer that a slight sinus exists in the lip at the part where the keel is formed in the two last whorls: the mouth appears to be oval with an extremely short beak, or rather, only a sinus in its lower angle, and an expanded outer lip: the keel is placed about one-third down the whorl, it is large and rises rather suddenly; above it the grooves before mentioned are sometimes decussated; a small portion of the dark epidermis is remaining upon one specimen.

I am indebted to Lady Burgoine and Miss Beminster for the specimens figured of this rare Barton fossil; I consider it to be a fresh water shell, from some one of the mixed beds above the London Clay of the Hampshire coast.

The decussated grooves had escaped observation until I saw them strongly marked in a specimen kindly lent me by the Viscount Fitzharris. The apex is commonly destroyed, and holes corroded in various parts of its surface, by the action probably of some acid develloped during the fermentation of vegetable matters, in the marsh or at the bottom of the river where the animal anciently lived, a circumstance that is not so likely to arise in salt water, and has therefore been used to distinguish fresh water shells by.

Figures 1 to 4 represent P. rigidus in different stages of growth: figs. 5 and 6 are outlines of the mouth of P. ater; they shew the lip more enlarged than usual in the genus, and not reflected or expanded, as in some species.

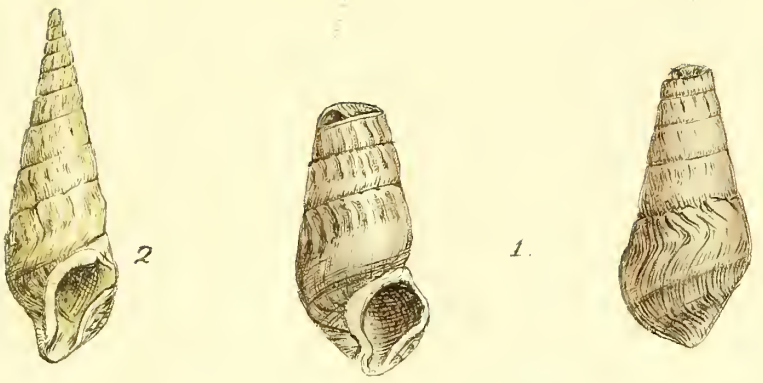
POTAMIDES concavus.

TAB. CCCXXXIX.—*Figs.* 1 *and* 2.

Spec. Char. Subulato-conical, transversely striated; volutions rather concave towards the upper part, costated; costæ obscure, arched, with a slight eminence above the middle of each; base with one or two granulated carinæ, convex; lip enlarged below, with a small groove in its upper angle.

The concavity near the upper edges of the volutions crossed by the irregular costæ is the distinguishing mark of this shell: the columella is smooth with a produced and somewhat recurved base; the aperture is nearly round, notched at the base, which forms a short beak; the transverse striæ are not very deep, so that in worn individuals they are wanting.

I first received this from the Rev. Mr. Iremonger, who collected it on Barton Cliff, see fig. 1; it has since been met with in what is called the upper marine formation at Headon Hill on the Isle of Wight, by my son G. B. Sowerby; a specimen brought by him is given at fig. 2. This species differs from small worn specimens of P. Melanioides, with which it might easily be confounded, in the length and curvature of its beak, as well as the concave surface of its whorls. Fig. 3 represents a small variety of P. Melanioides from Plumstead Heath for comparison.



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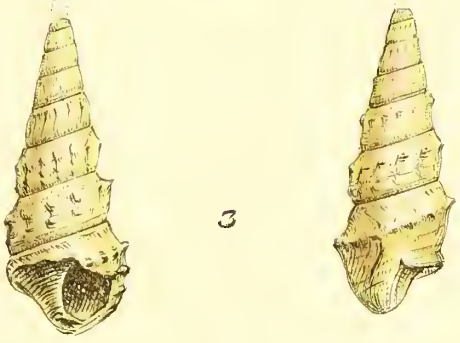

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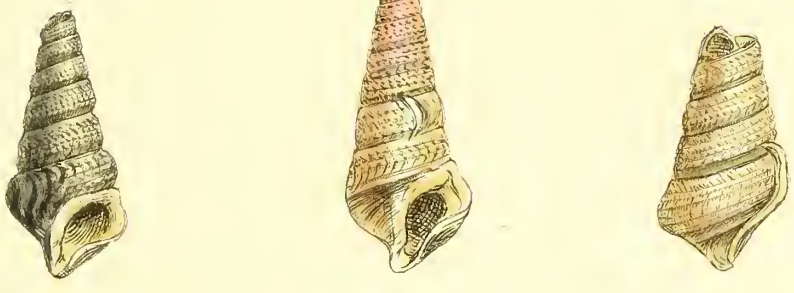

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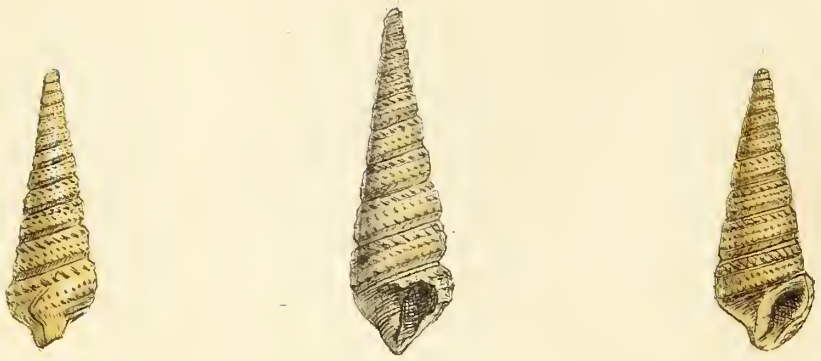

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POTAMIDES? margaritaceus.

TAB. CCCXXXIX.—*Fig.* 4.

Spec. Char. Conical, turreted; five close rows of bead-like granules surround each whorl, the first and fourth row minute, and the fifth larger than the other two; lip expanded, plicated; columella recurved, obtusely carinated.

Syn. Murex margaritaceus. *Brocchi* 447, *t.* 9. *f.* 4.

The granulated surface has a very rough aspect; the spire is rather shorter in proportion than many of the genus; the largest row of granules is placed near the upper edge of each whorl, but is not sufficiently distinct to merit the title of a corona; the lip is thickened and a little expanded, it has two or three furrows within its upper part, and resembles much that of the recent P. muricatus.

Brought from the upper marine formation of the Isle of Wight by Professor Sedgwick. It is unquestionably the shell described by Brocchi.

POTAMIDES? cinctus.

TAB. CCCXL.—*Fig.* 1.

Spec. Char. Subulato-conical, with three rows of nearly equal granules upon each whorl, and two carinæ near the edge of the base; suture subcanaliculated; columella with one plait.

Syn. Cerithium cinctum. *Lamarck Env. de Paris* 84.

A longer shell than the last, and not so rigid in its aspect; it has a flatish base, and a thin but enlarged

lip: the plait upon the columella is independant of the inner edge of the beak, which is obtuse. It differs from P. Lamarckii of Brochant in having a longer beak, and this plait upon the columella.

From the same formation as the last; collected by Mr. G. B. Sowerby at Headon Hill.

POTAMIDES? plicatus.

TAB. CCCXL.—*Fig.* 2.

Spec. Char. Subulato-conical, or subcylindrical; whorls longitudinally plaited, transversely sulcated and striated; sulci 3 or 4; base convex; lip crenulated.

Syn. Cerithium plicatum. *Lamarck Env. de Paris*, 84.

The crossing of the sulci over the plaits form arched rows of obtuse tubercles; the plaits are deepest upon the upper part of each whorl, so that the base appears less regularly tuberculated; the beak is rather contracted, and there is moreover a small canal at the upper angle of the otherways round aperture.

Found in the upper marine formation, upon the Isle of Wight, by Prof. Sedgwick.

POTAMIDES duplex.

TAB. CCCXL.—*Fig.* 3.

Spec. Char. Subulato-conical, with two rows of tubercles upon the upper, and three upon the lower whorls; upper rows of tubercles largest; sides of the whorls flat; base flat, with two carinæ near its edge; beak short, inner edge rising upon the columella.

This differs from P. cinctus in having only two rows of granules upon the upper whorls, and in their being so

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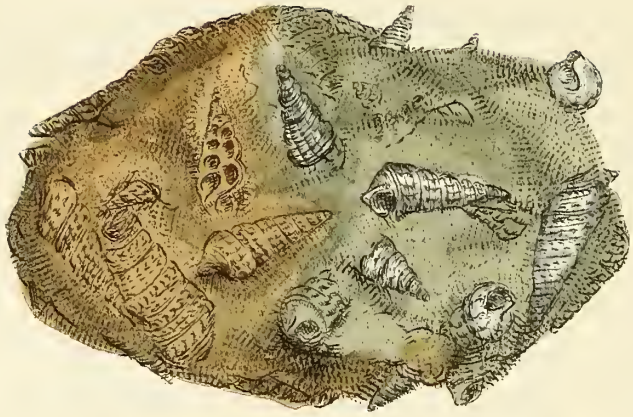

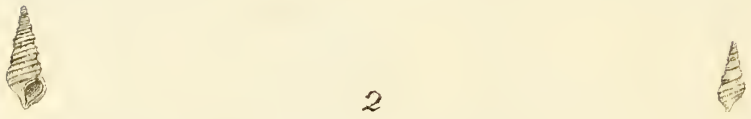

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disposed as to give that part of the spire nine sides: the turns are not easily distinguished from each other, except by the larger row of tubercles.

Out of the upper marine stratum at Headon Hill, where it is abundant: it resembles Murex turbinatus of Brocchi, p. 443, but is evidently distinct.

POTAMIDES ventricosus.

TAB. CCCXLI.—*Fig.* 1.

Spec. Char. Conical, turreted; whorls ventricose, costated, transversely striated; striæ two or three upon each whorl, most elevated upon the costæ; aperture orbicular, with an extremely short beak.

A small well circumscribed species; the striæ that cross the costæ upon the spire almost divide each of them into three tubercles: there are two more striæ upon the base which is convex; the orbicular aperture appears to have no furrow even within its upper part; the columella is smooth, and the beak obscure.

This gregarious shell is very abundant in some parts of the so called upper marine formation of the Isle of Wight, accompanied with hardly any other shell except the last species. I have received it also from France, but without a name.

POTAMIDES acutus.

TAB. CCCXLI.—*Fig.* 2.

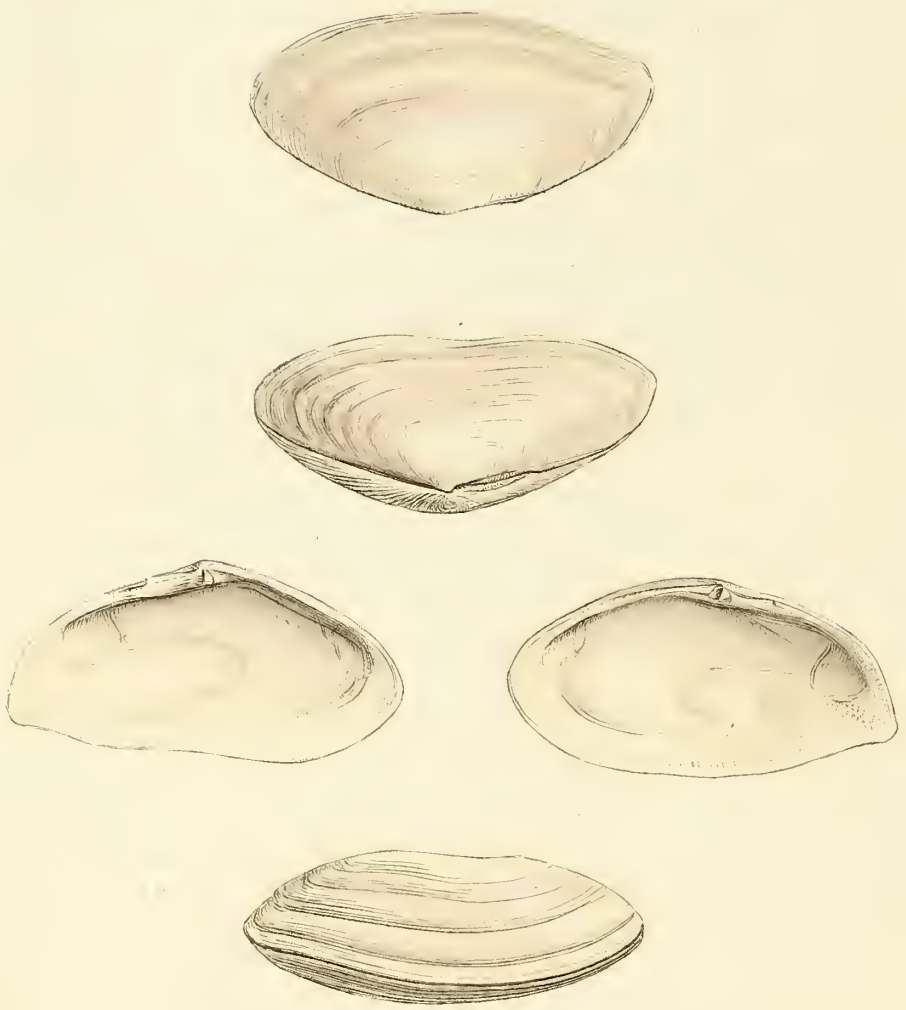
Spec. Char. Conical, turreted; whorls convex, bicarinated; carinæ acute; base convex, bistriated; aperture orbicular, with a narrow short beak.

About half an inch long; an elegant, smooth, sharply carinated species.

Discovered in a thin bed belonging to the lower fresh

water formation on the Isle of Wight, by Prof. Sedgwick; it is accompanied with Melaneæ fasciata and costata t. 241, Lymneæ, and other shells.

Should the genus Potamides, to which the above species are referred, continue to be received by Conchologists, it is likely that many, if not the greater part of Lamarck's 60 fossil Cerites will be referred to it; for as there are very few in the London Clay in England, it is probable that most of the species he has described belong either to the acknowledged fresh water formations, or to the doubtful or mixed strata known by the name of Plastic Clay, or upper marine formations, such as those of Woolwich, Newhaven, the Isle of Wight, the neighbourhood of Paris, &c.



PSAMMOBIA. *Auctorum.*

Gen. Char. A transverse, elliptical, or ovato-oblong, bivalve; depressed, slightly gaping at the sides; beaks not incurved; hinge furnished with two teeth in the right valve, and one in the other.

A genus nearly related to Tellina, but distinguished by the absence of lateral teeth in the hinge: some species have a general curvature of the valves to one side, but not the irregular twist in the margin peculiar to Tellina; many of the species are prettily marked, and most of them are furnished with an epidermis. There are three internal impressions from the attachment of muscles, one of them irregular and small is placed near the beak; there is also a deep sinus in the line to which the mantle was attached; one tooth in each valve is commonly bifid. The recent species are inhabitants of the sea in various latitudes.

PSAMMOBIA solida.

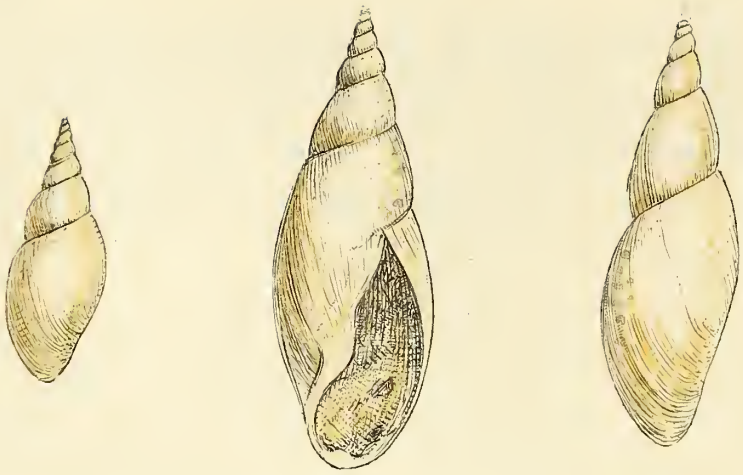
TAB. CCCXLII.

Spec. Char. Transversely elongated, depressed, tumid, nearly smooth, slightly curved; an obtuse carina marks the anterior side.

Nearly twice as wide as long: a thick bluntly shaped shell, with a slight oblique truncation upon the anterior extremity; it is more gibbose or tumid, although upon the whole not deeper than P. Ferroënsis, which it some-

what resembles; it is also smoother, and in many respects sufficiently different never to be confounded with that species.

Lately discovered by Mr. G. B. Sowerby in the upper marine formation at Headon Hill: fragments have also been found in other parts of the same formation upon the Isle of Wight, by Prof. Sedgwick.



LIMNEA longiscata.

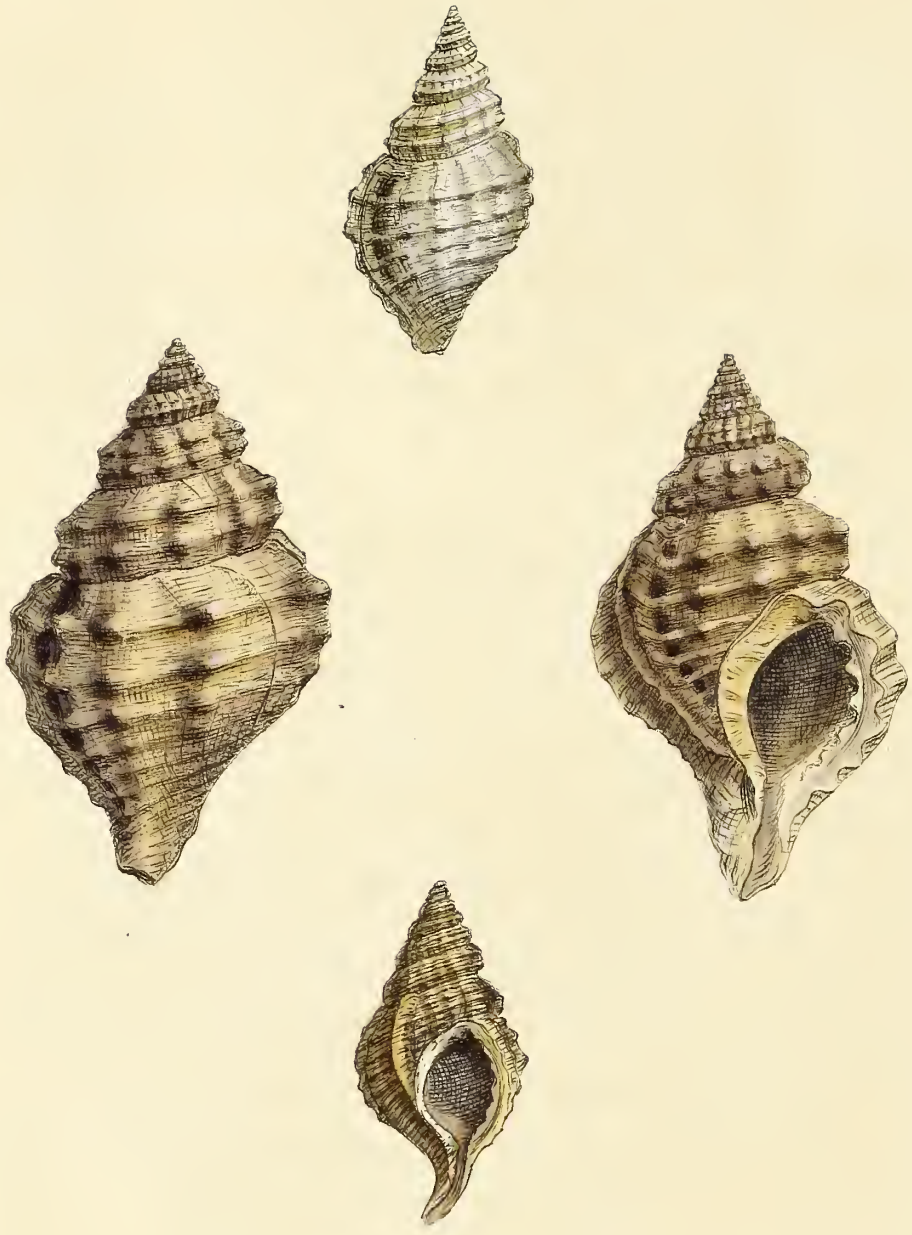
TAB. CCCXLIII.

SPEC. CHAR. Elongated, smooth; aperture ovate, elongated, two-fifths the length of the shell; plait upon the columella obscure.

SYN. Limneus longiscatus? *Brongniart Mémoire sur des Terrains formés sous l'eau douce, p.* 16. *t.* 1. *f.* 9. *Annales du Mus. tom.* 15. *t.* 22, *f.* 9.

A SHELL rendered conspicuous by the length of its spire, and the broad obtuse edge of the columella which hardly rises in the form of a plait. The volutions are not inflated in general, but in many specimens the upper ones are a little so at their lower parts, so as to project over the following turns; the aperture is nearly twice as long as wide, its inner lip is a little relieved; the surface is regular and shining, with the lines of growth finely marked.

This seems to have a wider and shorter aperture than the figure given by Brongniart of his Limneus longiscatus, but as it is liable to some variation I have ventured to refer it to that species, although I have not seen authentic specimens for comparison; should a difference really exist, it may distinguish the species of the upper from the lower fresh water formations: Brongniart found his shell only in the lower; the one figured is from the upper; it was collected by Mr. G. B. Sowerby upon Headon Hill last year.



MUREX argutus.

TAB. CCCXLIV.

SPEC. CHAR. Ovate, pointed, costated, transversely striated; costæ knotted; striæ many, elevated, several of them large; varices few; whorls inflated beyond each varix; aperture toothed; beak ascending.

SYN. Murex argutus. *Brander*, 13.

SOME of the striæ upon this shell are elevated into carinæ, especially two or three near the middle of each whorl: the same striæ form the knots upon the slightly elevated costæ, and have deep hollows between them at the backs of the varices; the aperture is nearly round, with about six obtuse teeth within the right lip, and several irregular varicose elevations upon the left lip, which is but a little relieved from the columella.

Solander has compared this with Murex pileare of Linneus, about which Gmelin has made much confusion: Murex distortus of Brocchi (p. 399. t. 9. f. 8.) also resembles it, but in that the volutions are more carinaform, a character which is pointed out by Brocchi to distinguish it from M. pileare, which he gives as a fossil species closely resembling the recent analogue from the Mediterranean sea: it is, however, probable, that they are distinct, and that the fossil one is the same as Brander's M. argutus, although Brocchi has not quoted it, I cannot be certain, for I have not seen authentic specimens, so could not place M. pileare of Brocchi among the synonima.

This is not a rare species in the Barton Cliff, but seldom exceeds an inch and a half in length; I have specimens of that size from several friends. The larger figure is taken from a magnificent individual in the possession of the Viscount Fitzharris.

CRASSATELLA. *Lamarck.*

GEN. CHAR. Shell equalvalved, inæquilateral, transverse; hinge with two strong teeth in one valve, receiving one tooth from the other valve, ligament internal, inserted into a pit in each valve; lateral teeth none or obsolete; sides closed; attachment of the mantle entire.

CRASSATELLÆ are commonly strong shells, although some of the fossil species are not remarkably so, whilst others are extremely thick and weighty: the valves are depressed, often ovate, and sometimes approaching orbicular: the pits for the attachment of the hinge ligament are placed on the anterior side of the teeth; there does not appear to be any true lateral tooth, but in the right valve there is often a pit, bounded by a short process, that receives the edge of the other valve: since this may be considered as the rudiment of lateral teeth, the strongest character to distinguish this genus from Mactra by, will be the entire marginal line of attachment for the mantle, which in Mactra is deeply sinuated anteriorly, this character is more valuable because it must be immediately connected with the structure and habits of the animal, and also with the open or closed sides of the valves.

For further particulars of this genus see Genera of recent and fossil Shells, by G. B. Sowerby.

CRASSATELLA sulcata.

TAB. CCCXLV.—*Fig.* 1.

SPEC. CHAR. Ovato-elongated, transversely sulcated; anterior side produced, obliquely truncated, defined by a ridge; edge toothed within.

var. β, sulci broad, lost upon the anterior side.

SYN. Tellina sulcata. *Brander*, 89.

THIS may be considered either as sulcated or costated, for the sulci are deep and rounded, equal to, and precisely the reverse of the spaces between them, that is in var. α; in β they are broader and shallower, and the spaces between them assume the form of small and but slightly elevated ribs, that are lost as they pass over the ridge bounding the anterior side, while in β they are reflected at an acute angle, and pass over that ridge: the var. β is also a wider, more depressed and delicately formed shell: the teeth of the hinge are perpendicularly striated in both, and the anterior side pointed.

This is quite a distinct shell from Peron's and Lamarck's recent C. sulcata from New Holland, although possibly the latter author may consider it a variety, but he does not quote Brander, whose shell is entitled by priority to the name sulcata, so that Lamarck's requires a new one. The one before us is a common shell at Barton, nor does it appear that one variety is more common than the other.

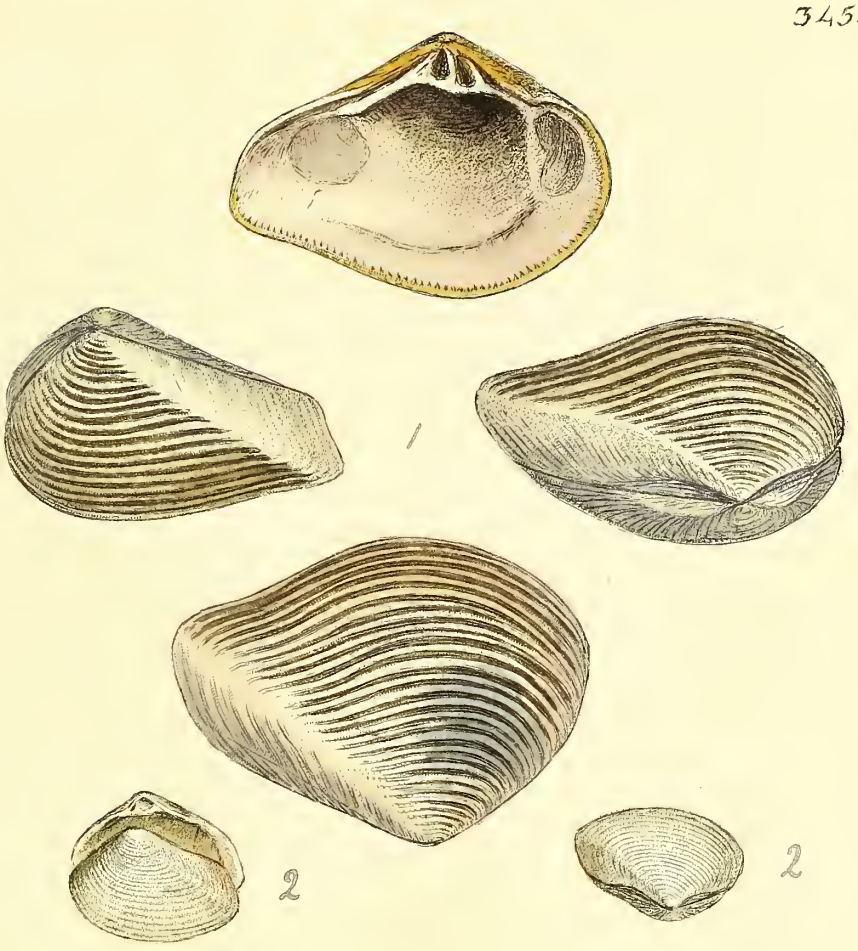
CRASSATELLA plicata.

TAB. CCCXLV.—*Fig.* 2.

SPEC. CHAR. Oblongo-ovate, concentrically and minutely plicated; plicæ reflected; anterior side defined by an obtuse ridge, obscurely truncated; margin toothed within.

A VERY neat and I believe new species; the anterior side is less produced and not so strongly defined as in sulcata; its truncation is also longitudinal, not oblique; the teeth are similarly striated.

Found in a bed of clay eleven feet thick and twenty-one from the surface, in a well dug at Bartley Lodge, Stone Cross, near Southampton, and presented to me by the Son of the worthy proprietor of that seat, Charles Lyell, Esq.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CARDIUM turgidum.

TAB. CCCXLVI.—*Fig.* 1.

SPEC. CHAR. Obovate, transverse, smooth, gibbose; anterior side longitudinally striated; edge minutely toothed.

SYN. Cardium turgidum. *Brander*, 96.

AN elegant almost orbicular shell, whose surface is in part very even and smooth, but marked with fine lines concealed beneath it, and which are rather hollow near the margin: the anterior side has 20 or 30 furrows cut longitudinally into it, so close together as to leave only sharp highly elevated lines between them: the teeth upon the edge are blunt, they are largest at the ends of the above mentioned furrows; the width exceeds the length a trifle, and the anterior side is slightly truncated.

This seems to be one of the few shells belonging to the London Clay, only described by Brander; it probably with several others is not found near Paris. May not the several formations that lie in strata, or coats, over the nucleus of the earth, have successive zones replete with the fossil remains of the animals, &c. peculiar to them, besides such as are universally distributed through them, which zones might be discovered by a diligent comparison of the fossils of different countries, and indicate the probable position of the poles previously to the destruction of life in those strata, for the order and perfection of many of the remains seem to indicate that they are not far removed from their original sites.

The shell before us has been presented to me by Miss Beminster, and several other friends, who have picked it up at Barton.

CARDIUM porulosum.

TAB. CCCXLVI.—*Fig.* 2.

SPEC. CHAR. Orbicular, anteriorly obscurely truncated, longitudinally sulcated, with a row of erect, approximate spines, united near their points, alternating with each sulcus; sulci terminated by ligulate teeth; hinge line straight.

var. β, with spines united through their whole length by a membrane; and their bases sunk beneath the edges of the sulci.

SYN. Cardium porulosum. *Brander*, 99. *Lamark env. de Paris*, 207. *Hist. Nat. des Anim. sans Vert. VI.* 18.

STRICTLY speaking, the smooth spaces between the deep and decussated sulci, can hardly be called costæ, they are so flat, or rather, especially in var. β, concave along the middle; upon these spaces are placed rows of erect almost cylindrical spines at very small distances from each other, and these spines are united for a great part of their length by a thin expansion of their sides, leaving their bases and extreme points free, forming little arches, a construction that is as elegant as it is remarkable; the long, canaliculate, marginal teeth, whose parallel sides render them quite unlike the teeth of a saw, are largest, and the series of united spines are highest upon the posterior side of the shell. The var. β is, if possible, more elegant than the α; it is certainly much neater, although the pores between the teeth are filled up: the edges of the deep narrow sulci that characterise this variety are considerably elevated, very even, and sharp; this var. has frequently more transparency, and a deeper colour (resembling what is technically called green ivory) than the other. Both varieties in the young state, or what is the same thing, near the umbo, are furnished with granules only in place of the united spines.

Found at Barton, but not very commonly, and very rarely approaching perfection: in the neighbourhood of Paris it occurs abundantly, and in a good state of preservation, yet I have not met with one so large as this figure from an individual kindly presented to me by Miss Beminster: Miss Dent has the finest specimen I have seen, but not quite so large.

The var. β is unknown at Barton.

PINNA granulata.

TAB. CCCXLVII.

SPEC. CHAR. Broad, nearly equilateral, convex, obscurely decussated, with a small elevation in the centre of each division; anterior side rounded.

A BROAD shell, particularly thick about the anterior side and edge; there is a rounded longitudinal elevation towards the posterior side which makes some fragments resemble those of a Mytilus; the length of the specimen figured is 8½ inches, the width 6.

Some time ago I was shewn fragments of this shell from the Kimmeridge Clay, near Weymouth, and mistook them for parts of Mytilus amplus, (M. Con. t. 27.) which by the bye is surely a Pinna, by Prof. Sedgwick. The specimen figured being much more perfect has set me right I trust: it is in the cabinet of Mr. De la Beche, who obtained it at Weymouth.

CHAMA squamosa.

TAB. CCCXLVIII.

Spec. Char. Attached by the right valve; nearly orbicular, subglobose, imbricated; lamellæ undivided, somewhat erect, anteriorly produced, and adpressed; posterior part of the right valve obsoletely costated; left valve rather convex; smooth within.

Syn. Chama squamosa. *Brander*, 86 *and* 87.

Distinguishable from Chama lamellosa of Lamarck, who has referred to Brander for his shell, by its undivided and not even lobed lamellæ.

In the section to which this species belongs the right valve is the largest and the one attached to foreign substances: by considering this the two sections of the genus made by Lamarck will be as readily recognised, as by observing whether the beaks turn to the right or the left hand, and the definition become more intelligible.

Extremely common at Barton, where perfect pairs are often found: it seldom exceeds in size the specimens figured; it is consequently a smaller shell than C. lamellosa: I have small individuals from some part of France; I think the neighbourhood of Paris; it is however rare in that country.

ROSTELLARIA Parkinsoni.

TAB. CCCXLIX.—*Figs.* 1 *to* 5.

SPEC. CHAR. Turreted, costated, transversely striated; last whorl tricarinated; aperture expanded, with a one-angled entire lip; superior canal short.

SYN. Strombus Pes Pelicani. *Brocchi, II.* 385.
Rostellaria, having only one spur-like process *Parkinson, Vol. III.* 63.
R. Parkinsoni, *Mantell Geol. Sussex, p. 72 and* 108.

A SHELL strongly resembling Strombus Pes Pelicani, but well distinguished by the shortness of the superior canal of the aperture; and as Parkinson observes, by there being only one process from the wing-like lip; in Pes Pelicani the upper canal has a process besides the three that proceed from the lip; the striæ, costæ, and general form are the same in both.

The fossil Strombus Pes Pelicani of Brocchi is presumed to be the same as the one before us; but whether the green sand species mentioned by Parkinson, see his tab. 5, fig. 11, and by Mr. Mantell, be also the same, until we have more perfect specimens for comparison than have hitherto been met with, is very doubtful.

The present species occurs in the London Clay, and in the sandstones beneath it, but above the Chalk.

Fig. 1 exhibits the natural cast of the inside in a ferruginous sandstone, and the artificial cast of the outer surface from the opposite impression in the same stone, from Maidenhead, between Bray and Windsor; given me by Mr. Walter; it is accompanied by several other fossil shells known in the London Clay, in some of which the shelly matter still remains, especially of Dentalia.

Fig. 2 is from a cast also in ferruginous sandstone, from the low Cliff under Reculvers Church, in Kent.

Fig. 3; the shell remaining in the sandstone of Bognor Rocks.

Fig. 4; two views of a Highgate specimen. And Fig. 5, a similar one from Folkstone. Specimens resembling those from Maidenhead are also found in Gunter's-hill Sand-pits, near Emsworth, Hants, as I am informed by my good Friend Js. Holloway, Esq.

ROSTELLARIA calcarata.

TAB. CCCXLIX.—*Figs.* 6 *and* 7.

SPEC. CHAR. Turreted, costated, transversely striated; costæ linear, curved; last whorl carinated; outer lip furnished with a large oblong process, the upper angle of which is formed into a long curved spine; beak pointed; superior canal obtuse.

Parkinson, Vol. III. p. 63, *tab.* 5, *f.* 2.

THE last whorl of this elegant shell has several carinæ besides the principal one, but they are very little elevated: the spire has no carinæ, but is costated, and has some varicose sutures remaining upon it, which do not occur in the preceding species. The squarish wing-like process upon the outer lip is somewhat variable in form, its angles being more or less conspicuous: the spine from its upper angle is an elongation of the carina upon the whorl: the inner lip is entire, with a rounded edge.

This shell was first noticed by Parkinson: it is by no means rare in the whetstone-pits of Blackdown. The largest individual I have seen belongs to Mr. De la Beche; it is given at fig. 6. The specimens are all silicious casts.

AMMONITES Davœi.

TAB. CCCL.

SPEC. CHAR, Depressed; sides nearly flat; volutions exposed, ornamented with numerous transverse sulci, and a few distant, obtuse tubercles; aperture nearly orbicular.

IT is of little importance whether this shell be called sulcated or ribbed, the sulci and spaces between them are so nearly equal. When one coat of the shell is removed these spaces are flat, as happens in Ammonites annulatus, tab. 222, which this much resembles, the distant tubercles being the distinguishing mark; it has also fewer whorls; each tubercle covers, and as it were attracts together about four of the sulci.

Found in the blue Lias of Lyme Regis, in Dorsetshire, and preserved by Mr. De la Beche. I have named it to commemorate the present intelligent President of the Royal Society, as I had formerly done the late President.

AMMONITES Brodiœi.

TAB. CCCLI.

SPEC. CHAR. Largely umbilicate, gibbose, costated; costæ radiating, large and numerous, terminated upon the sides of the whorls by obtuse tubercles, front rounded, plicated; aperture transversely oblong, curved.

SOMEWHAT resembling Ammonites Brocchii, tab. 202, but less gibbose and more strongly marked. The radiating ribs are slightly curved: from each of the tubercles

that terminates them proceed about four plaits or lesser ribs, that pass around the front, and meet the tubercles upon the opposite side: this part of the inner volutions is concealed.

This shell was given me a long while ago, as found on Portland Island, but with some doubt, by my kind and worthy friend, Js. Brodie, Esq. whose name I wish to perpetuate: from the appearance of the stone I should rather suspect it to have come from the under or Iron-shot Oolite.

AMMONITES perarmatus.

TAB. CCCLII.

SPEC. CHAR. Depressed, armed with two concentric rows of large pointed tubercles; volutions exposed, few; front rounded; aperture nearly orbicular.

THE tubercles are joined transversely by obtuse ridges into 18 or 20 pairs upon each whorl; the remaining portion of the shell is even: it is rather remarkable that the tubercles are as sharp nearly in the cast of the inside as the outside of the shell: there are about four whorls: the aperture is in length about one-third of the diameter of the shell, and is rather longer than wide.

A very conspicuous Ammonite; found in the Pisolite at Malton, and given me by Mr. Alexander Crawford, of Scarborough. Besides other characters which distinguish it from A. Birchii, tab. 267, the acute cast of the spines is a conspicuous one; the size of these spines will distinguish it from a somewhat similar Ammonite not yet figured, found near Oxford.

ASTARTE obovata.

TAB. CCCLIII.

Spec. Char. Obovate, uniformly convex, corrugated; lunette impressed; anterior margin subtruncated, interior edge crenulated.

The transverse rugæ are most conspicuous upon the anterior part of the surface, where they are also somewhat waved. From A. excavata, tab. 233, it may be distinguished by the anterior side not forming a separate lobe, and by being less elongated transversely.

Found by Prof. Sedgwick in the inclined beds of the ferruginous Sandstone, beneath the green Sand, on the eastern side of Sandown-bay, on the Isle of Wight; and mentioned by him in his paper on the Geology of the Isle of Wight, in the third Vol. new series of the Annals of Philosophy, p. 335, No. 5.

PECTEN papyraceus.

TAB. CCCLIV.

SPEC. CHAR. Depressed, obliquely oval, with large unequal, rectangular ears, striated, very thin.

NUMEROUS elevated striæ, that are decussated, upon the larger ear especially, by lines of growth, cover this very thin flat shell: there is no sinus between the ears and the rest of the shell, so that it is not easy to say where they begin: the length exceeds the width about one-fourth: the two valves are very nearly equal.

Preserved in the Woodwardian cabinet at Cambridge by the late Prof. Hailstone, who obtained it in the schale of North Ouram Coal-pits, near Bradford. It is a curious circumstance that a marine shell should be found so near the remains of land vegetables common in the Coal formation, a formation in which shells of any kind are very rare, and where hitherto only fresh-water ones had been found. Casts of Pecten are very abundant in the Schale filled with decomposing Iron Pyrites; no other shells accompany them except rarely an indistinct species of Anomia. The specimens are decaying very rapidly.

NAUTILUS regalis.

TAB. CCCLV.

SPEC. CHAR. Gibbose, plain, not umbilicate; front flattish; sides convex; aperture rather wider than long.

THE volutions of this Ammonite increase rather more rapidly in size than those of N. imperialis, which is near akin to it, and from which it is further distinguished by the solid columella or axis, by the convex, not straight, sides of the aperture or section, in the young shells, and the expanded sides and straight front of the aperture in the adult.

It is remarkable that the prevailing species of Nautilus, found at the depth of about 60 feet, in the Regent's Canal, near the White Conduit House at Islington, in 1815, and also in Hyde Park, should prove different from that found at Highgate, and upon the Isle of Sheepy, yet numerous specimens prove that fact.

I have named it regalis, as it seems little inferior in splendor to the Imperialis, and nearly equals it in size, though it appears from two or three specimens I have with small remains of the thickened edge of the aperture near the axis, that it is full grown when about nine inches in diameter and five in thickness. I believe no Author has noticed it. It probably belongs to the lower part of the London Clay stratum, and is accompanied by vertebral columns of Pentacrinites subbasaltiformis.*

* Miller's Natural History of Crinoidea, p. 140.

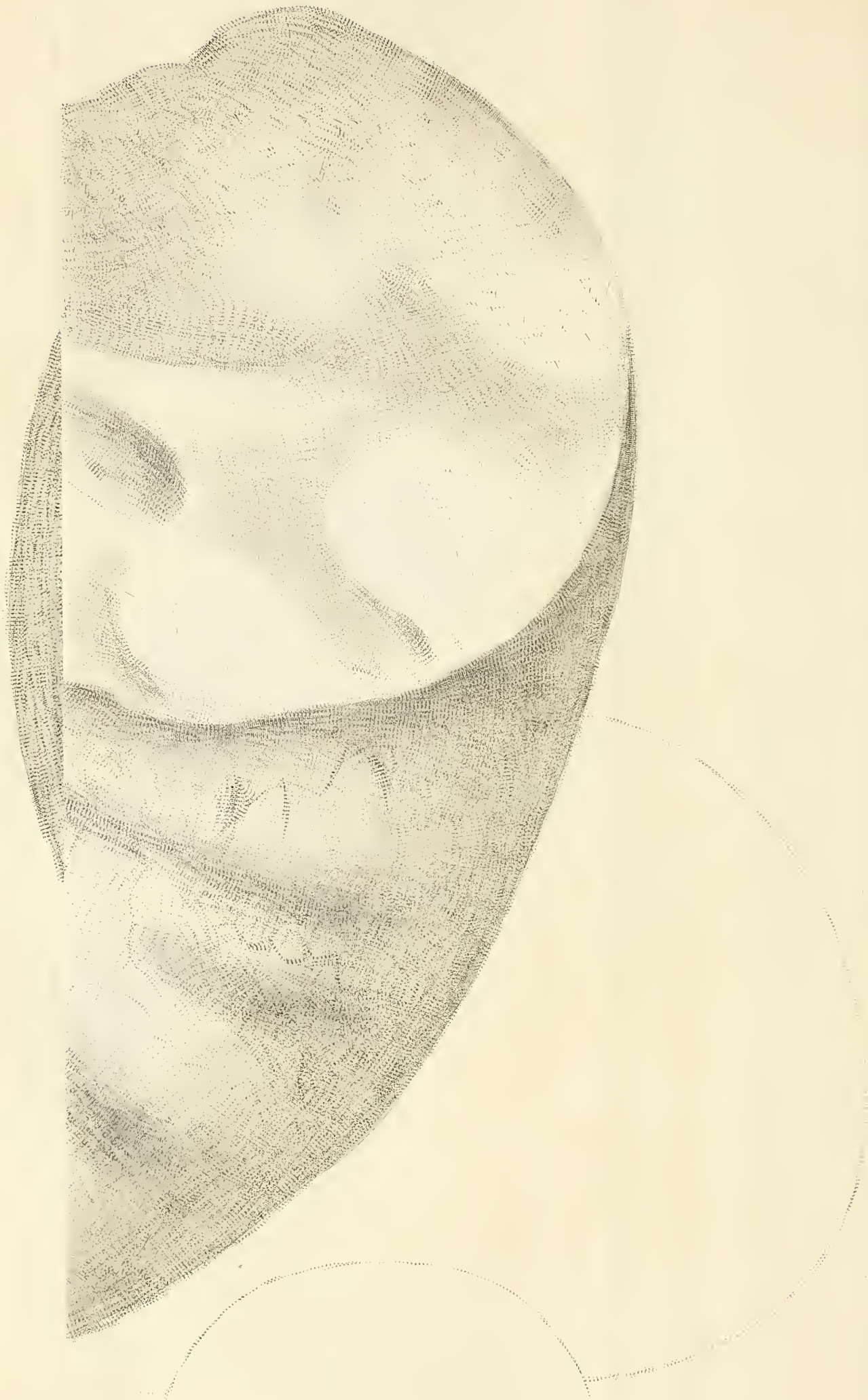
NAUTILUS radiatus.

TAB. CCCLVI.

SPEC. CHAR. Gibbose, umbilicated; surface marked with curved, radiating undulations; sides and front rounded; aperture orbicular, deeply indented.

A SPECIES intermediate between N. elegans and undulatus. It is more regularly convex, and has more undulations than the latter, as many as four or five to each septum, but not near so many as occur in the former. The length and breadth of the aperture are nearly equal and exceed half the diameter of the shell. I am not acquainted with the situation of the siphunculus. The waves upon the surface are most elevated, and meet from the sides upon the front at an obtuse angle.

Lately found in the neighbourhood of Maltor, probably in the lower part of the Green Sand formation. I have received but one specimen, a cast in Marly Limestone, mixed with grains of Silex and of blackish Green-earth. The umbilicus is so open as to shew the inner whorls and the edges of the septa very beautifully. It is possible that if the shell had remained, the umbilicus would have been filled, but in that case the shell must have been very thick, so I have ventured to describe it as open.



AMMONITES peramplus.

TAB. CCCLVII.

Spec. Char. Discoid, with a few large obtuse radii; whorls ventricose, the inner ones half exposed; front rounded, plain; aperture transversely obovate.

Syn. A. peramplus. *Mantell, Fossils of the South Downs, p.* 200.

Volutions four or five, almost half concealed and rapidly increasing in size, so that the last occupies one-third of the diameter of the shell: the aperture is but a little wider than long, but pressure has so much influence upon this proportion, that it is not easy to determine the original form, some specimens perhaps being pressed in the opposite direction to others. The radii are most prominent at the inner part of each whorl, and are lost before they reach the front: there are about 14 upon the specimen before me: the crisped and deeply sinuated edges of the septa form an elegant ornament upon some parts of the surface of the specimen.

Two or three large fragments and nearly perfect specimens of this Ammonite, have been at various times presented to me by Gideon Mantell, Esq. who had obtained them in the neighbourhood of Lewes. The largest mass, as observed in a note to his description, p. 201, is part of a shell that was probably three feet in diameter. When this Ammonite is laterally compressed it approaches to the following.

AMMONITES Lewesiensis.

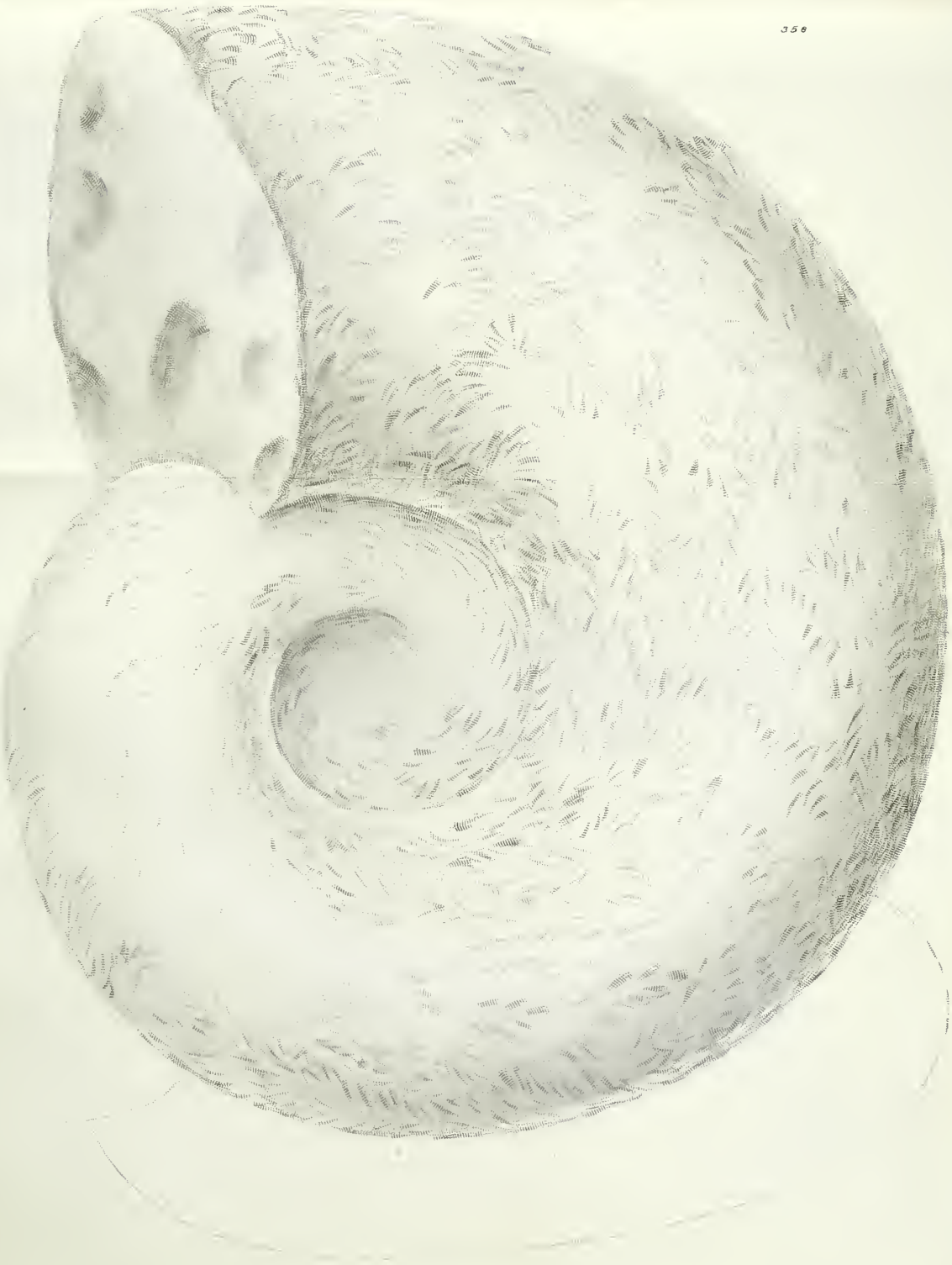
TAB. CCCLVIII.

SPEC. CHAR. Discoid, obscurely radiated, radii large and obtuse; whorls depressed, inner ones half exposed; front narrow, rounded, plain; aperture sagittate.

SYN. A. Lewesiensis. *Mantell, Fossils of the South Downs, p.* 199, *tab.* 22, *f.* 2.

So rapidly do the volutions of this shell increase in size, that it has the appearance of being umbilicated, although about half of the inner whorls is visible. The breadth of the last whorl, or what is the same thing, the length of the aperture, seldom, as far as I have had an opportunity of observing, equals half of the diameter, although one of the three proportions given in Mr. Mantell's description, makes it equal to 9-14ths, possibly pressure may make as much irregularity in the proportions as are observable in different parts of that description, evidently taken from several individuals. The radii are broad, very little elevated, and often entirely obliterated, in which latter case the edges of the septa become beautifully develloped.

Several varieties of this gigantic Ammonite have been sent me from Lewes, by Gideon Mantell, Esq. whose zeal for science has not been checked by the weight of the masses that have fallen in his way, or the difficulty of their removal. I have given a diminished figure of a specimen fifteen inches in diameter and four inches thick, which has lost, almost entirely, the obtuse radii, a cir-



cumstance that renders it more distinct from A. peramplus than otherwise it would appear. I have an intermediate specimen from Dover, by favour of Mr. Sankey, the aperture of which is elliptical; and a small one from Lewes, between the two; both these have the radii distinct, especially the small one, in which they extend nearly to the front: these specimens lead me to suspect the A. Lewesiensis is only a compressed variety of the peramplus. Mr. Phillips has observed in his paper on the Chalk Cliffs near Dover, (Trans. Geol. Soc. V. p. 30 and 33), that the Ammonites lie horizontally in the Chalk: this may account for their being so frequently compressed: but as Mr. Mantell has had numerous opportunities of observing them, I have followed him in describing them as two species. I have seen one on the beach near Dover that measured full three feet across, but it is so long ago that I do not know which species to refer it to.

AMMONITES Plicomphalus.

TAB. CCCLIX.

Spec. Char. Discoid, umbilicate; umbilicus large, with 8 or 10 diverging, rather sharp, protuberances around it; front rounded, plain.

Aperture ovate; about 3-7ths the diameter of the last whorl long; narrowest towards the front; the eminences about the inner edges of the volutions are wide, and extend over a part of the sides: the umbilicus is large, equalling half the length of the mouth.

Presented to me by Mr. Weir, who found it in a very mutilated state in the harder part of the Sandstone stratum, at Bolingbroke, Lincolnshire.

CANCELLARIA.

GEN. CHAR. Oval, subturrited; last whorl more or less ventricose; aperture almost entire, lower angle either slightly canaliculated or produced into a short recurved beak; outer lip sulcated within; inner lip expanded; columella plaited.

BUT few of the species of this genus are much elongated, the form of the last whorl generally giving them an ovate contour. The decussated ridges upon the surface have given an apt name to the genus, although in some species the transverse ridges are not sufficiently prominent to give the appearance of lattice work; while the longitudinal costæ are strong and sharp: in a few species varicose sutures are formed at different periods of growth by the inflated outer lip; such species approach to Murices, but are well distinguished by the folds upon the columella; these folds are few, very prominent, and compressed; they are sometimes accompanied by two or three irregular protuberances. Some species are elegantly colored; they all belong to marine animals.

Auricula simulata of tab. 163 is a species of this genus, with only one proper plait upon the columella.

CANCELLARIA quadrata.

TAB. CCCLX.

SPEC. CHAR. Ovate, elongated, cancellated, without either varices or beak; two obtuse plaits upon the columella, besides the spiral edge; outer lip sharp, entire, striated within.

AN elegant shell, a little resembling Cancellaria (Auricula) simulata, but more pointed and very differently marked; it has also another fold upon the columella: the surface is covered by small hollow squares formed by a number of elevated lines that cross each other with much regularity, of which however the transverse are rather the strongest: all the whorls are convex; the last occupies nearly two-thirds the length of the shell.

This species may be arranged in the last of the four sections Mr. G. B. Sowerby has divided the genus Can-

cellaria into, although it does not precisely agree with some other species belonging to that section, but it would probably be better to form another section.

The size varies considerably; the extremes are shewn in the plate. I am indebted to Miss Salisbury, and other friends, for specimens found at Barton.

CANCELLARIA lævіuscula.

TAB. CCCLXI.—*Fig.* 1.

SPEC. CHAR. Short, ovate, pointed, furnished with varicose sutures and costæ, crossed by numerous obtuse elevated lines; columella biplicated; aperture scarcely canaliculated.

NEARLY allied to Cancellaria costulata of Lamarck, but shorter and more strongly decussated; it has one or two sutures upon each whorl, with several rather curved costæ: the columella has two folds besides its spiral rather sharp edge: the outer lip is thickened near the edge, and internally ribbed.

Found at Highgate by G. B. Snow, Esq. at Barton by the Rev. Mr. Bingley, and at Lyndhurst by C. Lyell Esq. jun. It is rare. I have been favoured with the same species by Mr. De Gerville, found in Normandy.

CANCELLARIA evulsa.

TAB. CCCLXI.—*Figs.* 2, 3, *and* 4.

SYN. Buccinum evulsum. *Brander*, 14.

SPEC. CHAR. Short, ovate, pointed, furnished with varicose sutures and costæ, crossed by several acute carinæ, most elevated upon the costæ; columella biplicated, aperture scarcely canaliculated.

VERY nearly like C. lævіuscula, but large, and distinguished by the small number and elevation of the carinæ that cross the costæ, and give it a rugged aspect and feel: they have intermediate rather elevated striæ that are very obscure.

These both belong to the second of Mr. G. B. Sowerby's sections of this genus, although they do not altogether agree with the definition.

Plentiful at Barton: it was also found at Lyndhurst by C. Lyell, Esq. jun.: and it occurs in the neighbourhood of Paris.

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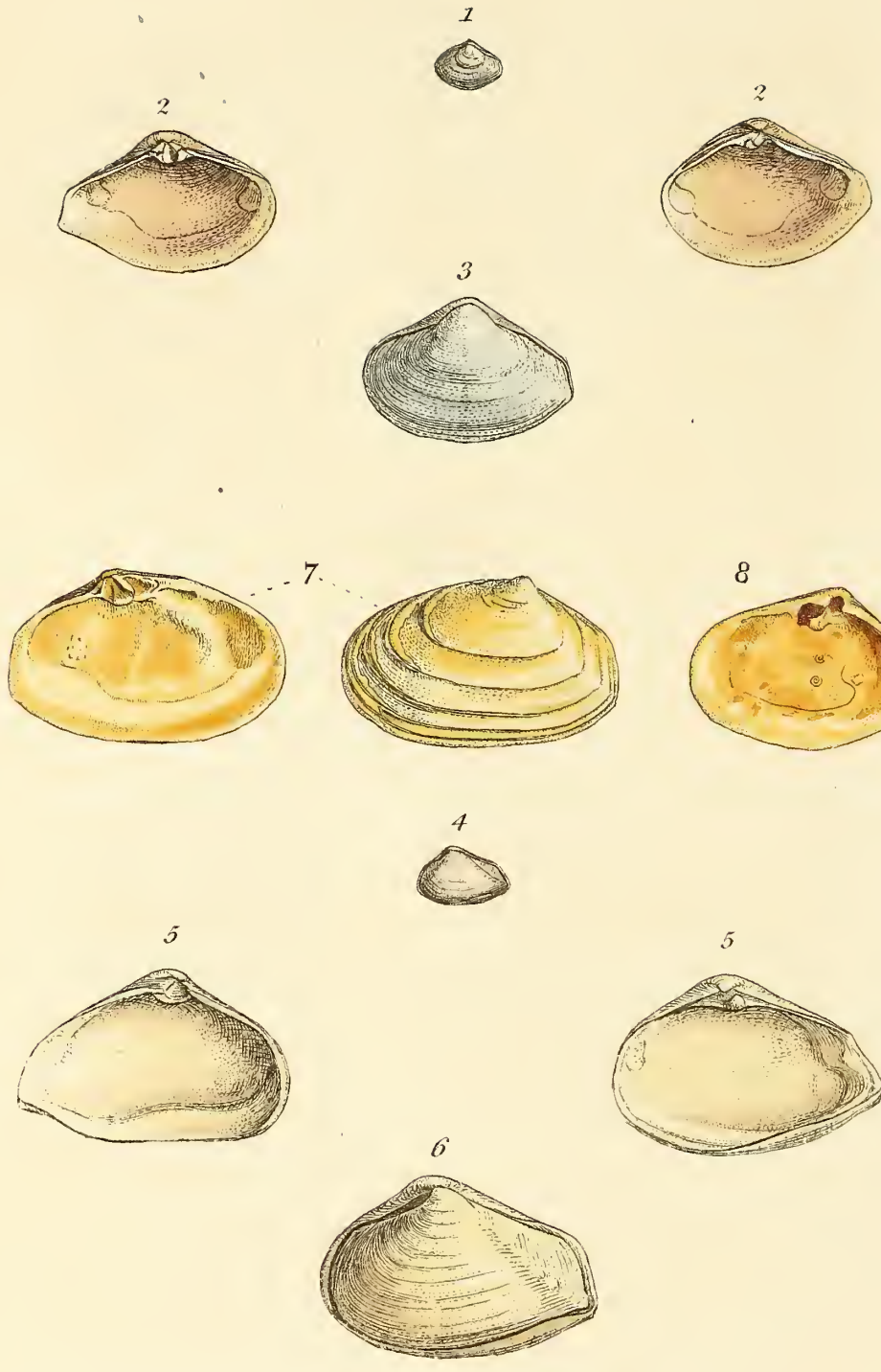
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CORBULA nitida.

TAB. CCCLXII.—*Figs.* 1, 2, *and* 3.

SPEC. CHAR. Ovate, subtrigonal, equilateral, gibbose, anteriorly truncated, smooth; valves nearly equal.

A THIN shell, most gibbose towards the beaks, which are somewhat produced; the young individuals are rather pointed on the sides; the old ones oval, with a small truncature anteriorly; the surface is smooth, often shining, and the valves very nearly equal: length rather more than half the width.

Very small, not exceeding three-tenths of an inch in width: the almost perfect equality of the valves is remarkable, but the form of the hinge is exactly that of the genus Corbula, from which it cannot conveniently be separated.

First observed with the following, by Professor Sedgwick, in several parts of the Isle of Wight, below the upper fresh-water formation.

Figs. 2 and 3 are magnified representations.

CORBULA cuspidata.

TAB. CCCLXII.—*Figs.* 4, 5, *and* 6.

SPEC. CHAR. Transversely oblong, tumid, inequivalved, subequilateral; anteriorly carinated and cuspidated; lower margin of the left valve expanded and inflected.

A THICK blunt-edged shell, whose anterior side is obliquely truncated, and defined by a ridge that ends in a projecting point on the margin; the lip-formed edge of

the left valve bends over the margin of the other, and encloses about half of its base : the disk is rather rugged when full grown.

This occurs along with the last in what is called the upper marine formation in Colwell and Whitecliff Bays, on the Isle of Wight. They have both been introduced to notice by Professor Sedgwick.

Figs. 5 and 6 are enlarged to three times the natural length.

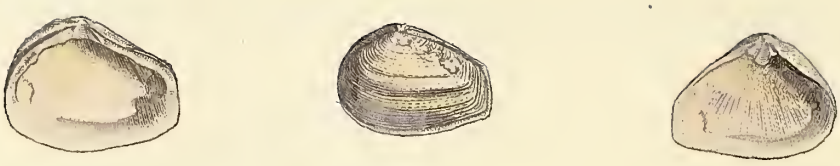
CORBULA complanata.

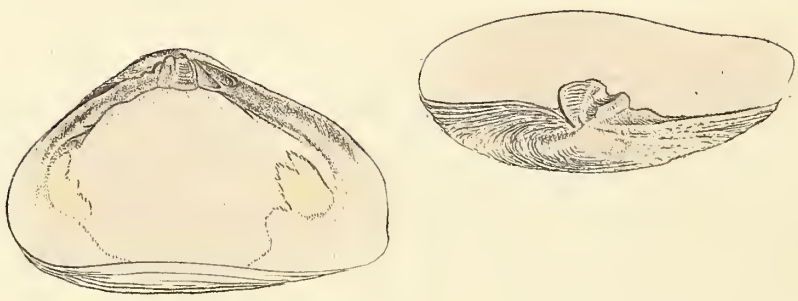
TAB. CCCLXII.—*Figs. 7 and 8.*

SPEC. CHAR. Transversely oval, elongated, depressed, and sulcated; sulci few; anterior side smallest, subtruncated, and defined by an obtuse ridge; left valve enclosing the other.

THE posterior part of the right valve is peculiarly flattened and thickened : the surface is smooth between the six or eight furrows that appear to be formed by periodical interruptions of growth : the left valve is most convex ; the lower edge of it encloses that of the other valve. Length about half the width.

Newly discovered by the Rev. G. R. Leathes in the Crag at Roydon. It is rare. The outer coat is generally corroded, so as to give it a costated appearance, a circumstance common in Crag fossils.





MYA? gregarea.

TAB. CCCLXIII.

Spec. Char. Obovate, convex, subdeltoid, smooth; anterior side truncated; lower margin of the left valve produced.

The anterior side of the right valve is rather cuneiform and truncated; the left valve is only truncated; it is larger all round than the right, so that it receives the upper edges of that valve upon the thickened parts on each side of the hinge: on the posterior side it has a remote tooth, that with its accompanying hollow forms a secure lodgment for the corresponding edge of the right valve: within the anterior edge it has only a slight furrow: the outer surface is nearly smooth, except a few lines of growth and the eroded beaks. The line upon the inner surface to which the mantle of the animal was united, has a small sinus equal only to the quarter of a circle, placed close to the anterior muscular impression.

It is highly probable that this shell will become the foundation of a new genus, to which will be associated Myæ labiata (Linn. Trans. Vol. X. p. 326, t. 24, f. 1, 2, and 3,) plana and subangulata (Min. Conch. t. 76, figs. 2 and 3.) The former of these is a fresh-water shell, inhabiting the Rio de la Plata, a circumstance strongly confirmatory of the fresh-water origin of the stratum near the top of Headon Hill, in which immense numbers of the species now before us are closely grouped together unmixed with other shells. The remote tooth, the small sinus in the mantle, and the inequality of the valves, are among the characters that distinguish it from Mya; the inequality of the valves, however, upon which much

stress has been laid, is too variable, as we have just seen in the genus Corbula at tab. 362, to be relied upon ; and an examination of the recent species is still wanting to establish the two other points: the erosion of the umbones does not occur in the other fossil species.

First observed by Mr. Webster (Trans. Soc. Geol. VII. p. 227), and again by Mr. G. B. Sowerby, who has compared it to Mya labiata (Annals of Phil. new series, Vol. II. p. 220). They found it near the top of Headon Hill: Prof. Sedgwick has since found it at Calbourne; and it probably occurs near the top of the upper fresh-water formation on other parts of the Isle of Wight.

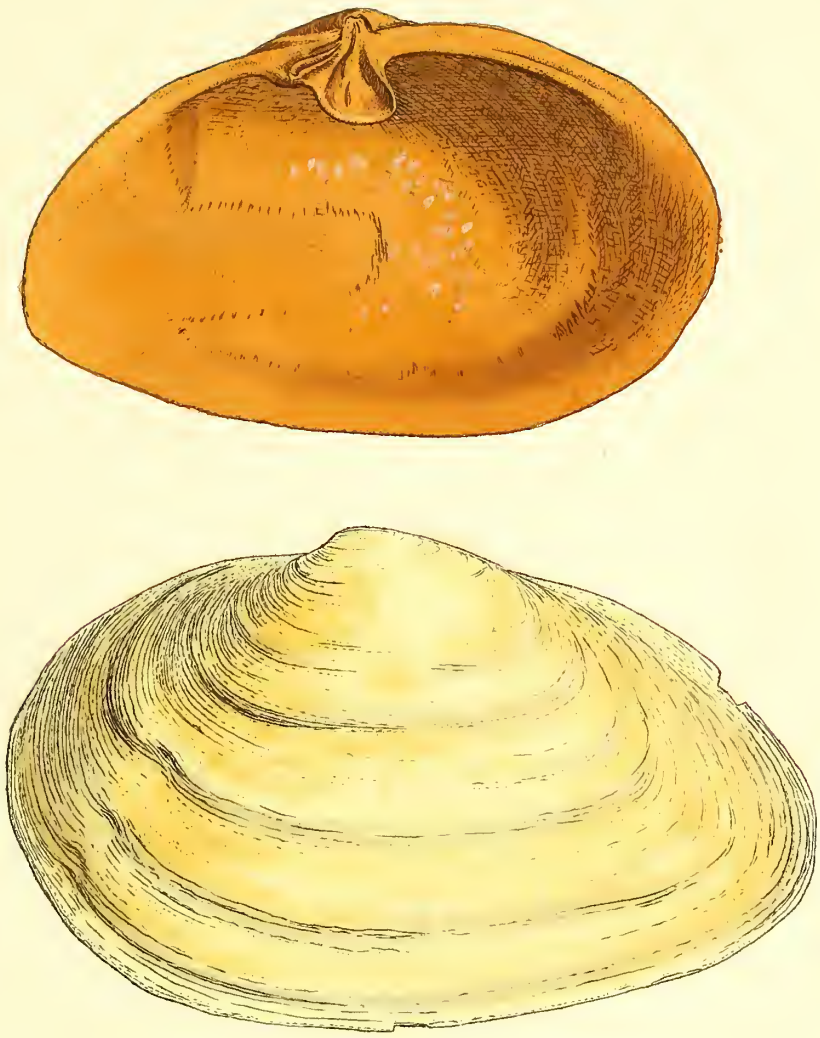
MYA arenaria.

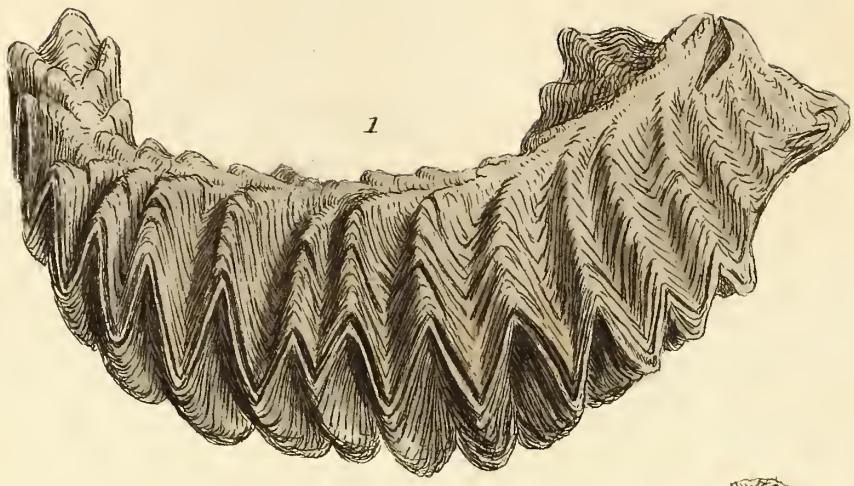
TAB. CCCLXIV.

Spec. Char. Ovate, anteriorly rather pointed, posteriorly rounded; hinge tooth large, with a lateral appendage.

Mya arenaria. *Linn. et Auctorum.*

So perfectly does this resemble the recent Mya arenaria, that we can find no distinguishing mark. In all probability this is one of the few shells belonging to genuine diluvian deposits, and accidentally mixed with the older fossils. It is frequently found, but rarely perfect, in the Crag pits of Norfolk and Suffolk. I first received it from Mrs. Cobbold of Ipswich. The figures are taken from specimens in the possession of the Rev. G. R. Leathes.

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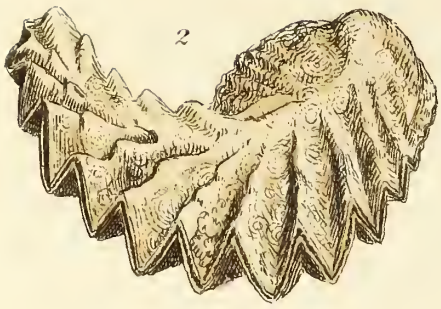
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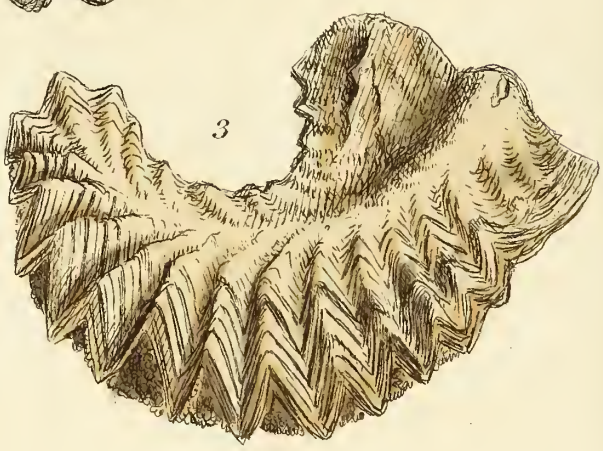
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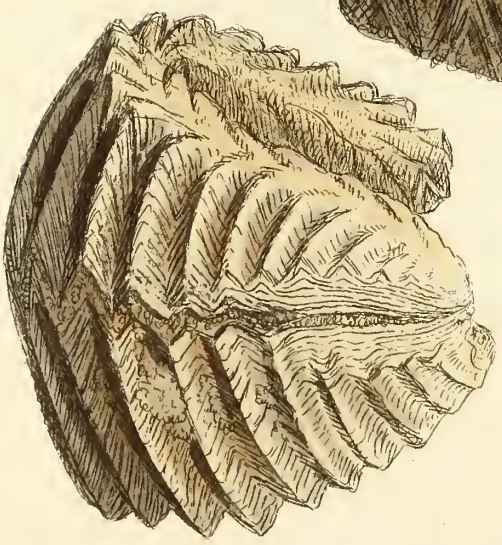

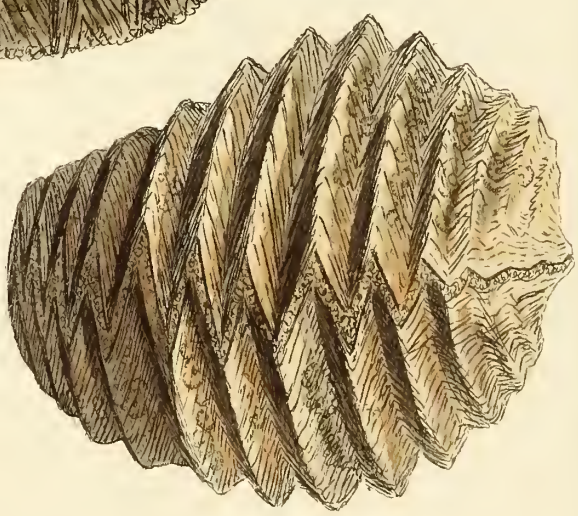
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OSTREA carinata.

TAB. CCCLXV.

Syn. O. carinata. *Lamarck Hist. Nat. VI.* 216.

Spec. Char. Elongated, pointed at both ends, arched, plaited; sides flattened; middle longitudinally cariniformed; plaits numerous, angular, and regular; ears two, variable.

The pointed ends, the depth of the valves, and regularity of the plaits, are characters by which this Oyster may generally be known: the curvature and ears are variable, the anterior or exterior ear being often obsolete in old shells.

A series of specimens of various ages have been selected for the illustration of this species: it will be seen that the curvature varies considerably. Fig. 1 is the most elongated variety: it is from the grey Marl below the Chalk at Folkstone in Kent: the remainder are silicious: they are from the green Sand of Chute Farm near Longleat Park. An extremely elegant French specimen, nearly double the size of any here figured, was some time ago given to me by Mr. de Gerville, with intentions that render his friendship more dear to me than even his numerous presents do: it is from the Chalk Marl, and is so much curved as to form three-quarters of a ring: the outer ear is obscure, but the inner is very large. A figure of this specimen is given in Mr. G. B. Sowerby's work upon the Genera of Shells. The Rev. Mr. White in his Natural History of Selburne, has figured a similar specimen: and the same species probably is given by

Faujas St. Ford, (Hist. Nat. de Maestricht, t. 24, f. 1) as a Gryphite. It appears to be a species common to the green Sand and the strata between it and the Chalk, and will serve to identify that range; while the O. gregarea, which is a less curved and much more irregular shell, distinguishes the Pisolite.

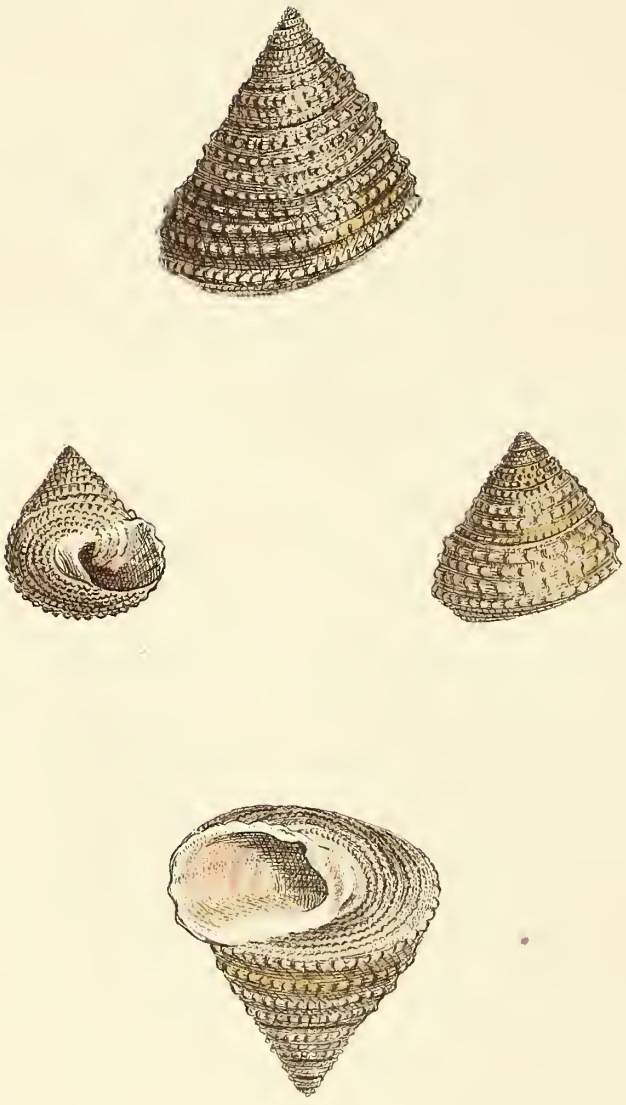
BULIMUS costellatus.

TAB. CCCLXVI.

SPEC. CHAR. Ovate, rather acute, longitudinally costated; costæ small, numerous; aperture elongated, acute above.

ABOUT an inch and a quarter long, and rather more than an inch wide; the aperture occupies half the length of the shell. The ribs are very thin and numerous, rather sharp, and nearly straight; there are no striæ between them.

A considerable resemblance may be observed between this shell and Bulimus ellipticus (tab. 337.) but they differ in general form; the aperture and last whorl are proportionally much larger in B. costellatus, than in B ellipticus, and it is also a right handed shell, which the latter never appears to be. I am indebted to J. Holloways, Esq. for the use of what appears to be a unique specimen, from the freshwater formation of the Isle of Wight. It was found along with B. ellipticus, in a pit on the North of the road at Schalcomb, where I have in vain sought for another. It is possible that if a perfect specimen were examined, some characters might be discovered that would remove it from the genus Bulimus, and also from among the land shells.



TROCHUS monilifer.

TAB. CCCLXVII.

SPEC. CHAR. Conical, transversely striated; volutions rather convex with three rows of tubercles and crenated edges; base slightly convex bearing six rows of granules; aperture quadrangular; columella curved along one edge of the aperture, truncated.

SYN. Trochus nodulosus. *Brander, f.* 6.
T. monilifer? *Lamarck env. de Paris, p.* 99.

A REGULARLY conical shell whose base is equal in diameter to the height. The aperture is placed obliquely, it has an entire waved edge. The tubercles upon the spire are placed upon transverse elevations, that give the volutions a convex appearance; the centre of the base is smooth but not umbilicated; the inside is pearly.

For excellent specimens of this long known elegant Trochus, we are indebted to Miss Teed, who sent them from Hordwell. It is probable that the T. monilifer of De Lamark is a distinct species, although nearly related to the Hampshire Trochus nodulosus, for the only specimen I have from France has rather concave whorls, a flat base, with the columella projecting, and eight rows of granules, agreeing with Lamark's description and besides, the surface shews no transverse striæ, but it is not perfect, it is certainly a distinct species; but that it be Lamarck's, I have no proof, and Lamarck refers to Brander's nodulosus, which is quite distinct from the recent species of that name.

GRYPHÆA bullata.
TAB. CCCLXVIII.

SPEC. CHAR. Transversely obovate, irregular, smooth, thin, depressed, beaks small; upper valve concave; lateral lobe obscure when old.

WHEN full grown this Gryphite is often wider than long, and the very small beaks, although incurved, have not the great degree of curvature common to other species of the genus. In the young state the beaks are more prominent, and the lateral lobe, although small, is distinct and very different from the spurious ear sometimes observable in Oysters; the surface is smooth and undulated, not imbricated; the substance uniformly thin, and the point of attachment generally minute.

Although much resembling an Oyster in general form, there is a something in the aspect that distinguishes this shell from that Genus, and the two generæ from each other; the existence of a lobe in the young state confirms this a Gryphite; the uniform rounding of the convex valve, and the want of imbricated laminæ, assist in the discrimination.

A handsome series of this species has been liberally afforded me by Mr. Weir, who obtained it in the Clunch Clay, at Bracken Wood End, near Horncastle in Lincolnshire; the thickness of the shell joined to its convexity, has given rise to the name of bullata.

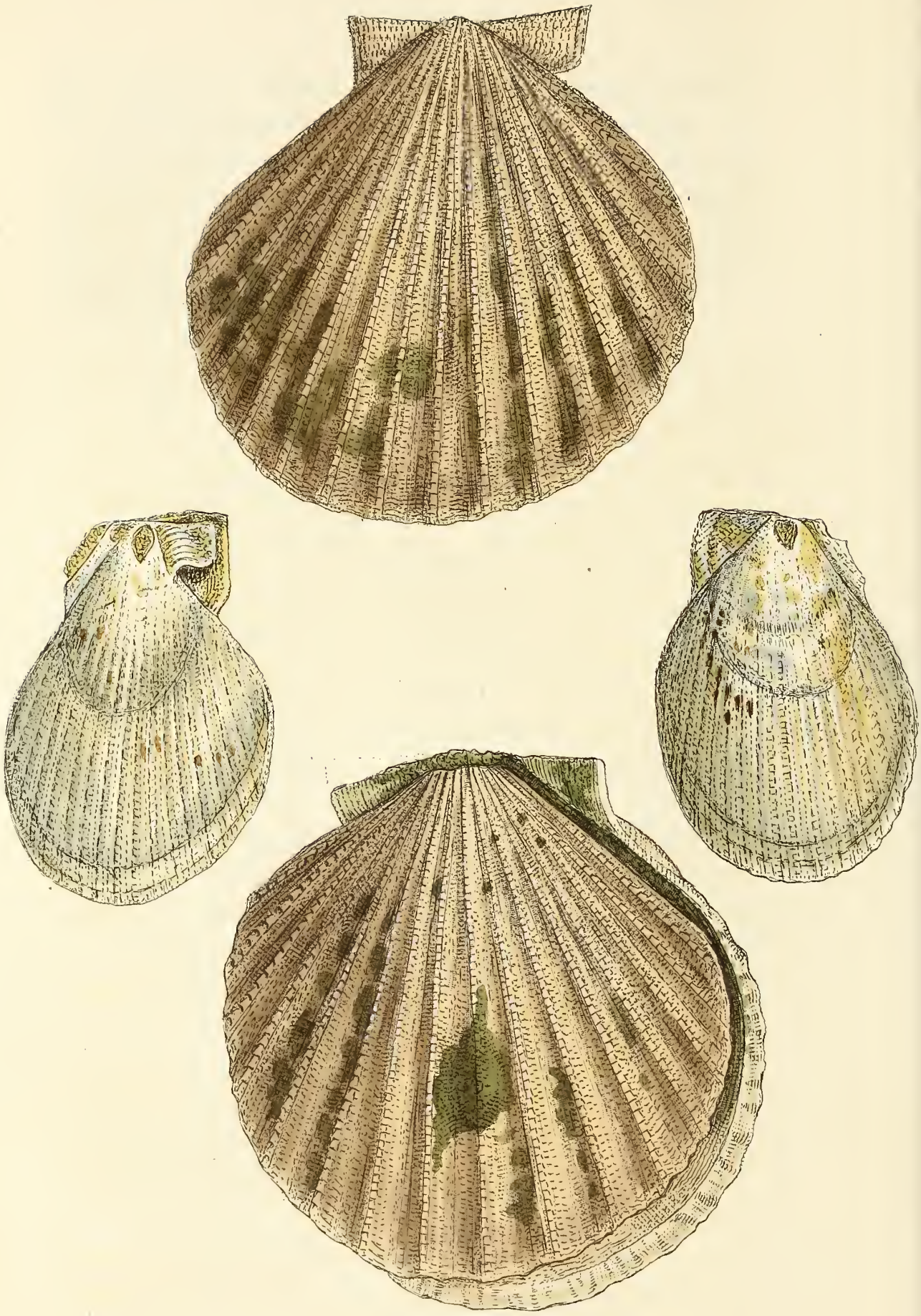
GRYPHÆA vessiculosa.
TAB. CCCLXIX.

SPEC. CHAR. Subrhomboidal, oblong, deep; lesser valve concave, small, thin; larger valve curved, composed of several distant coats.

LONGER than wide, with pointed beaks, and a small hinge; the depth and width are equal; both less than

the length; the lobe is distinct, but not sharply defined; the surface is smooth, and nearly free from laminæ.

Casts in Silex, supplying the place of the shell itself, are very abundantly collected in masses, in loose green sand stained by iron, occurring near Warminster, and generally unassociated with other fossils. I am obliged to Miss Benett for the specimens figured.



PECTEN asper.

TAB. CCCLXX.—*Fig.* 1.

SPEC. CHAR. Nearly orbicular, convex on both sides, bearing about 17 sets of rays roughened by subtubular imbricated scales; margin internally fimbriato-crenated; ears distinct, nearly equal.

SYN. Pecten asper. *Lamarck Hist. Nat. VI.* 180. *Lister Conch. t.* 470. *f.* 28.

THE rays are from 5 to 7 in a set, depending upon the age of the shell; the centre of each set has the largest scales, and is much elevated; the contour is oblique, much resembling that of the common P. opercularis. The inside is plain with a furbelowed margin.

Very abundant in the Green Sand, especially at Horningsham near Frome. Lamark describes P. asper as having 20 to 22 rays; this is not the case in the English specimens.

PECTEN obliquus.

TAB. CCCLXX.—*Fig.* 2.

SPEC. CHAR. Obliquely oval, convex on both sides; radii very numerous, roughened by semicircular imbricated scales; ears large, distinct.

EVERY third ray is larger than the two intermediate ones, they are all close together, the larger amount to about 20. The two valves are not equally convex, but otherways they are similar; the breadth it about two-thirds the length.

Drawn many years ago from a specimen in green sand belonging to my lamented friend Mr. Cunnington.

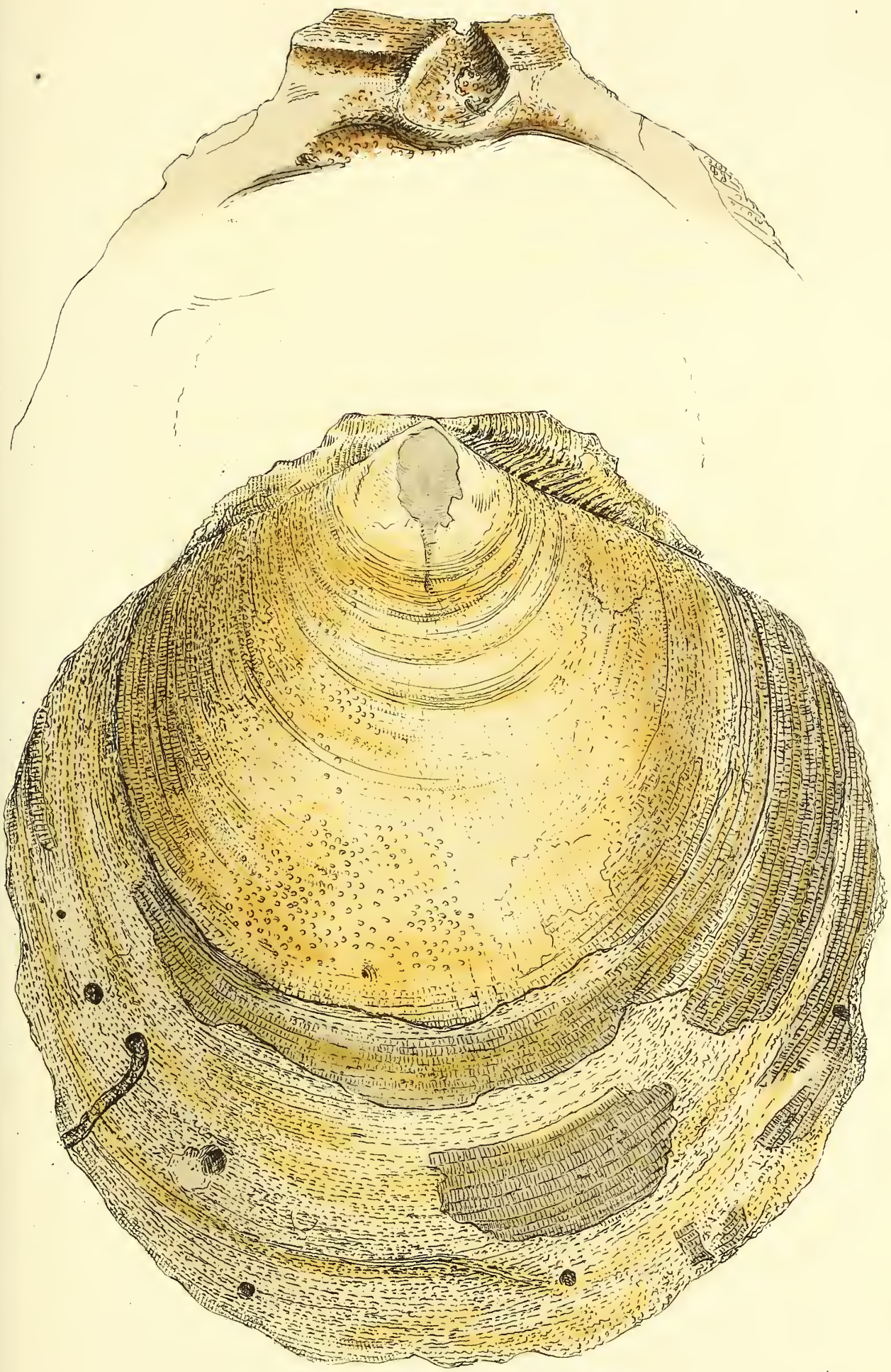
PECTEN cinctus.

TAB. CCCLXXI.

SPEC CHAR. Orbicular, gibbose, longitudinally striated, imbricated; edges of the laminæ, thin, erect; ears small; edge entire.

Remarkable for concentric, erect laminæ, that are very numerous, especially towards the edge; but from their being thin, they are commonly worn off. The ears are strongly marked with close ridges: the valves are thick, especially towards the hinge, and of nearly equal convexity. The striæ are sunk and rather irregular.

Dawson Turner, Esq. of Yarmouth, celebrated for his botanical knowledge, was the first Friend who sent me this interesting shell. It was found in the alluvial clay of Suffolk. The specimen figured was sent me from the neighbourhood of Horncastle by Mr. Wier, both are remarkable for having grains of iron ore, arranged in one, two, or three regular rows between the concentric laminæ, according to the distance of those laminæ, the grains being uniform in size. It is probable that they both belong to the inferior or Ironshot Oolite, although the first is filled with indurated marl.



AMPULLARIA Ambulacrum.

TAB. CCCLXXII.

Spec. Char. Globose, with a canal around an acute spire; umbilicus plain within.

Strongly resembling Ampullaria acuta (tab. 284.) but well distinguished by the deep spiral canal around the upper edge of the whorls: this canal is flat at the bottom with nearly upright sides, resembling a trench cut round a hill. It is distinguished from A. canaliculata of Lamarck, by the form of the canal, by the roundness of its sides, and by the umbilicus not having a spiral groove within it; it also grows much larger.

This species has been frequently sent me from Hordwell, by Lady Burgoine, Miss Teed, Miss Dent, and other kind Friends to the Science; it has also been found at Muddiford, whence the upper figure, by Lady Burgoine, and at Stubbington by Mr. Holloway; but I have never met with a French specimen.

The probability of this and the other shells from the London clay stratum, classed under the Genus Ampullaria, being the exuviæ of marine animals, is so great, that it does not seem correct to arrange them with the recent species; they ought, as Lamarck has observed, to form a distinct Genus, which it is to be hoped will soon be defined, unless it ought to be included in Natica.

NATICA patula.

TAB. CCCLXXIII.

Three lower figures.

SPEC. CHAR. Hemisphœroidal, smooth, spire small, depressed; umbilicus open containing a spiral ridge.

THE last whorl is very large and expanded, so as to give the entire shell the form of half a flatted sphæroid cut along its axis. The surface is smooth, or so obscurely striated that it is difficult to persuade oneself that the striæ are worn away, I speak of concentric striæ; the lines of growth are visible enough. The umbilicus is large, and not quite half filled by a large callus, that does not spread over it, and is accompanied by a smaller one, which forms a spiral ridge. The spire occupies less than a fifth of the shell, and is barely relieved from the general surface of the last whorl.

Found in the Suffolk Crag at Ipswich, by Mrs. Cobbold, generally about an inch wide, but sometimes, as specimens lent me by the Rev. G. R. Leathes prove, an inch and a half; the lower figures exhibit these specimens.

NATICA striata.

TAB. CCCLXXIII.

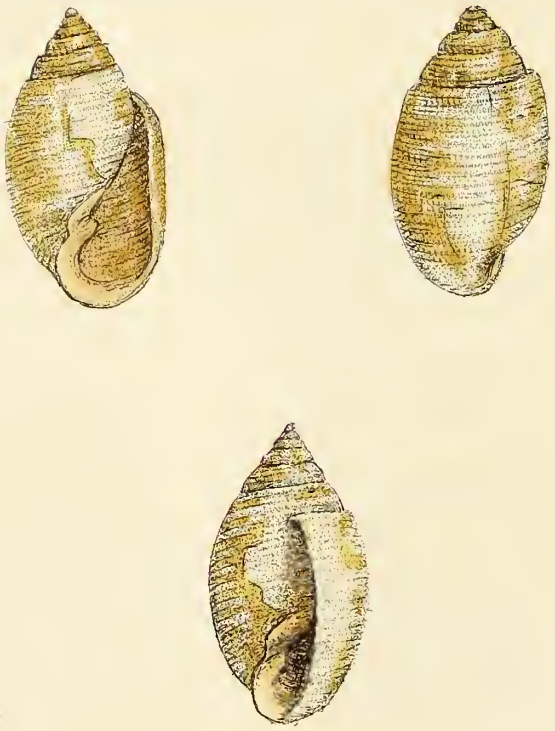
Two upper figures.

SPEC. CHAR. Subhemisphœrical, smooth; spire small, depressed umbilicus open; base concentrically striated.

GREATLY resembling the last, but not so much expanded; the spire is rather more prominent, the concentric striæ are impressed, but as they are liable to be lost by

wear, they cannot be relied upon for discrimination; the want of the spiral ridge in the umbilicus, is the most conspicuous character, and is constant.

Lent me from Barton by Miss Dent. It occurs also in France, but I do not know that it has been described. Were it not for the constant absence of the lesser spiral ridge in this, and its regular appearance in all the specimens of the Crag species, they might have been considered as varieties, but this character is so closely connected with that of the Genus, that it must surely be of importance enough to distinguish a species.



ACTEON. *Montfort—Leach,*

Tornatella Lamarck.

Gen. Char. A convoluted, elongated, univalve, with a projecting spire; aperture oblong, entire, with a sharp edged lip; columella furnished with a spiral callus or thick plait at its base; operculum oblong, corneous.

Most of the species of Acteon are similar in form, but differing in proportion; they are also generally striated transversely, and often elegantly colored; the aperture is perfectly longitudinal, and above two thirds the length of the shell, acute-angular above, and rounded below, the edge thickening, and uniting with the base of the columella forms the callus or what is commonly called the single plait upon it; other plaits sometimes occur upon the columella; the inner lip is very thin, and applied close to the shell. Voluta tornatilis the type of the Genus is a British marine shell, the inhabitant of which forms deep furrows when traversing the sandy shores it loves to frequent.

ACTEON Noæ.

TAB. CCCLXXIV.

Spec. Char. Oval, transversely striated, with one plait at the base of the columella; striæ equidistant, numerous, impressed, obscurely decussated, lip sulcated within.

The only character except the want of color, by which this fossil can be distinguished from the recent Acteon

flammeus (Voluta of Linn.) is the sulcated lip, and this may possibly be only a sign of adolescence, and not be found when the lip acquires its greatest thickness.

A rare Crag fossil, found by the Rev. G. R. Leathes at Walton in Essex; it is extremely fragile.

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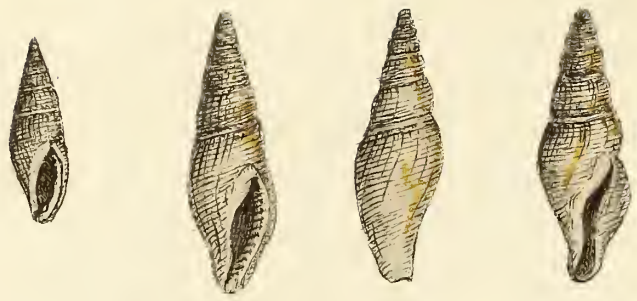

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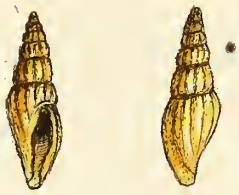

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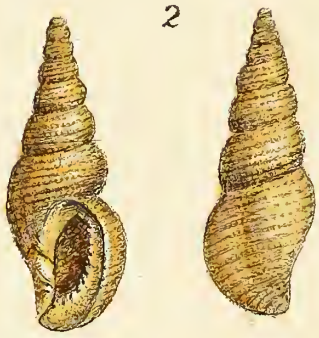


BUCCINUM junceum.
TAB. CCCLXXV, *f.* 1.

SPEC. CHAR. Subturrited, reticulated; whorls rather swelled; base produced; aperture lanceolate, with a striated lip.

SYN. Murex junceus, *Brander*, 26.

SIX or seven whorls with rounded reticulated surfaces compose the elongated spire of this Buccinum; the striæ are elevated, sharp and uniform, except near the upper edges of the whorls, where, being more distant, they leave a small furrow; the aperture is long and narrow, acute angular above, notched, and from the produced form of the base, almost beaked below: the outer lip is sharp edged, with many deep striæ within it.

A well known common shell at Barton. It has also been found at Highgate, but I believe not near Paris.

BUCCINUM sulcatum.
TAB. CCCLXXV, *f.* 2.

SPEC. CHAR. Turrited, acute, transversely furrowed; whorls ventricose; aperture ovate; lip toothed within, thickened by age.

WHORLS seven or eight, ventricose, each bearing about seven linear furrows; the base is rather prominent, and slightly recurved, the lip is thickened in the last stage of growth, but not previously, so that no varices are formed upon the spire, its edge is sharp, and a little way within are about a dozen elongated teeth. The general surface is smooth.

From the Crag of Ramsholt, by favour of the Rev. G. R. Leathes.

BUCCINUM Mitrula.
TAB. CCCLXXV, *f.* 3.

SPEC. CHAR. Turrited, acute, costated; aperture elongated, obtuse above, lip sharp edged with a small rounded sinus in the upper part.

THE costæ 10 or 12 in number, are rather most prominent at the upper part of each whorl; the base is even, not much produced; the columella is straight; the lip is

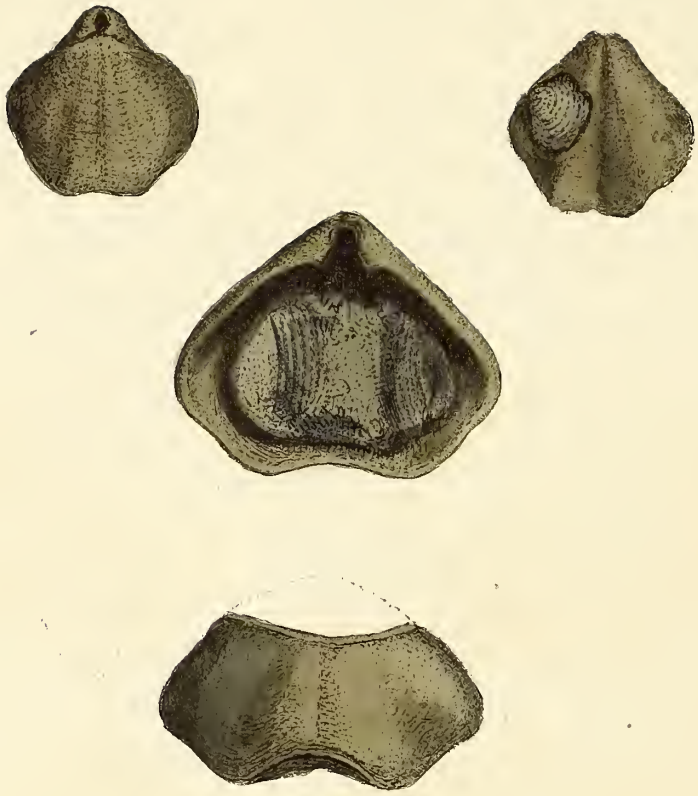
nearly straight edged, except a small rounded sinus near its junction with the body of the shell, below this sinus there is internally a slight protuberance, the aperture is oblong, equally obtuse at each end.

In general form this so much resembles B. juncius, that one is induced to place them in the same Genus, although there is a sinus in the lip of this; but in other respects and in the straight form of the lip it differs from Pleurotoma, to which it might perhaps otherways be refered.

A pretty Crag fossil picked up by my communicative Friend, the Rev. G. R. Leathes.

The unhappy termination of Mr. Sowerby's long illness, prevented the appearance of the 66th number of Mineral Conchology, at the appointed time. It is to be hoped that the materials left in the hands of his Sons J. D. C. Sowerby, and C. E. Sowerby, will enable them to carry it on regularly in future.

No. 2, Mead Place, November, 1822.



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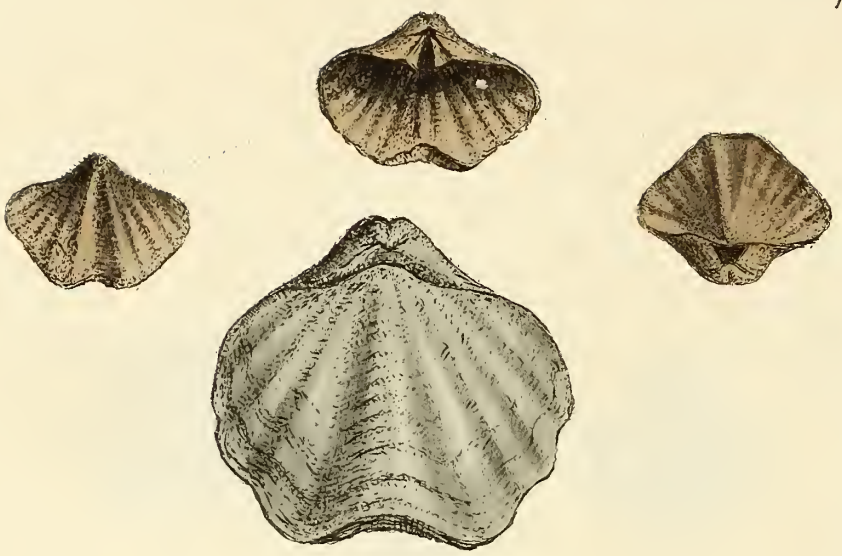

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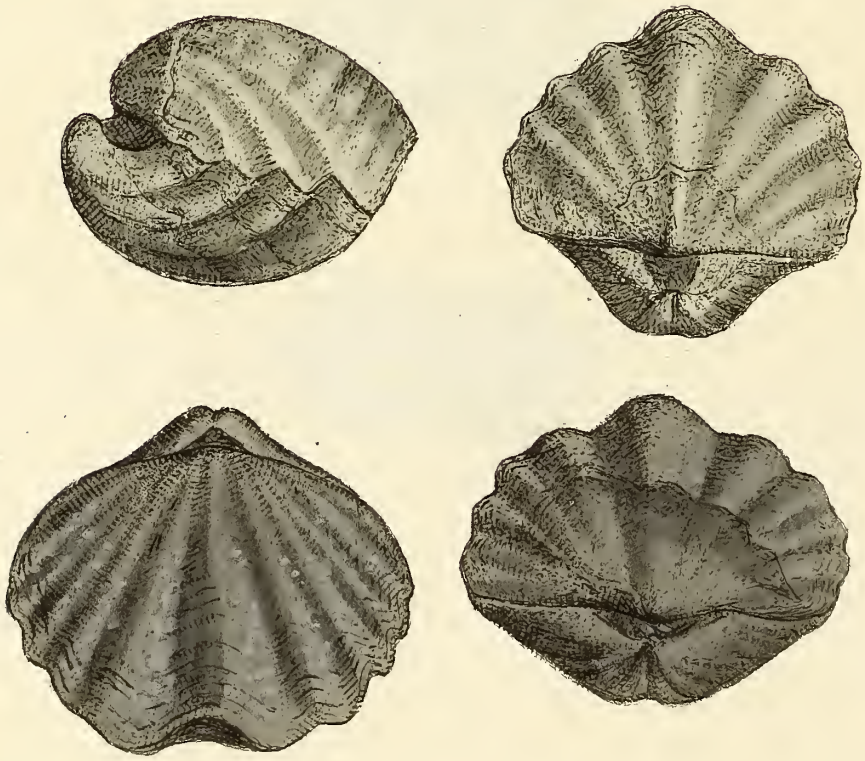


SPIRIFER ambiguus.

TAB. CCCLXXVI.

SPEC. CHAR. Subpentangular, gibbose, smooth, with the middle elevated towards the front; beak produced, perforated; hinge line very short.

THE produced beak and three-sided front give this shell a five-angled contour, although the sides are rounded. In general appearance it does not agree with most of the species of the Genus Spirifer, but approaches nearer to the smooth Terebratulæ; its having a perforated beak, and little or no hinge line, still further distinguish it; but the actual existence of spiral appendages seems to confirm it a Spirifer, unless its combining the characters of both Genera should render it adviseable to construct a new Genus of it. But as the appendages within the Terebratulæ are very variable, it will be well to wait until more of them are known.

Obtained from decomposed Mountain Limestone, (Rotten-stone) found near Bakewell, and kindly presented to me some years ago, by Mr. White Watson. The shell is replaced by Silex, which has retained the form of it, although the stone is completely decomposed and reduced to a brown powder; the spiral appendages are extremely fragile.

SPIRIFER minimus.

TAB. CCCLXXVII.—*Fig.* 1.

SPEC. CHAR. Transversely oblong, gibbose, with 15 longitudinal ridges, the three central ones elevated.

RATHER rhomboidal with rounded angles, the ridges are rounded, close together, and smooth; the three elevated ones are less distinct from each other than the others; the long line of the hinge, the flat space, and triangular foramen between the pointed beaks are very conspicuous, but the appendages characteristic of the Genus Spirifer,

are not in the specimens, although they are hollow, and to all appearance perfect.

Found with the last in decomposed Limestone, from the general wreck of which they have escaped by being composed of silex.

SPIRIFER Walcotti.

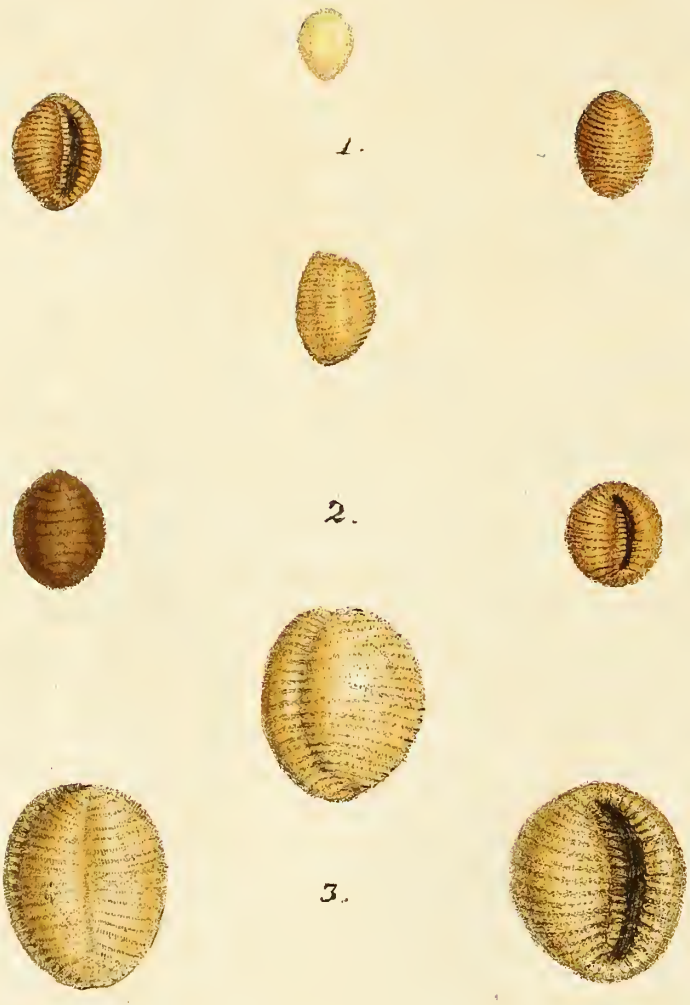
TAB. CCCLXXVII.—*Fig.* 2.

SPEC. CHAR. Suborbicular, gibbose with one large, rounded, elevated fold in the middle, and four smaller ones on each side.

BEAK pointed, incurved, the hinge line is shorter than the width of the shell; both valves are equally gibbose and smooth, the smaller one is shorter than wide; the area between the beaks is rather rounded, but furnished with a triangular foramen.

Found many years ago by Walcott, at Camerton, about six miles and a half from Bath, on the road to Wells, and represented by him in his work upon the Petrifactions found near Bath, *figs.* 33. Walcott observes of similar shells, " that those found on the upper Bristol road near Bath, are smaller; their shell thin; white; a triangular hole between the beak of the lower valve, and the hinge; and have the body *fig.* 33. A. B. within them; it consists of two hollow cones joined to each other by part of their base and to one of the valves, but not so close as to prevent the animal, or part of it, from retreating into them: the surfaces of them are beautifully covered with circular rows of small pyramids of spar." Thus it appears that he was the discoverer of the spiral appendages long before they were used as a generic character, although he did not clearly see their spiral form: he also observed the triangular foramen, and it is much to be regretted that he did not figure the shells as well as their contents, as they probably were a different species from the one before us.

The 3 upper figures are from a specimen in M. de la Beche's cabinet found in the Lias of Keynsham; the other two were given me by the Rev. Robert Plumtree, who collected them at Pyrton Passage, near Berkley, Gloucestershire; they are rather compressed.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CYPRÆA coccinelloides.

TAB. CCCLXXVIII.—*Fig.* 1.

SPEC. CHAR. Ovate, sphæroidal, transversely striated; striæ numerous, acute, not interrupted; aperture slightly arched, not contracted in the middle.

STRONGLY resembling Cypræa Coccinella, (Lamarck Hist. Nat. VII. p. 404. C. Europœa Leach. C. Pediculus Linn.) but rounder, and distinguished by the lip which is more uniformly convex, and does not contract the middle part of the aperture: like that recent species, it is smooth when young; its size is that of a pea.

CYPRÆA retusa.

TAB. CCCLXXVIII.—*Fig.* 2.

SPEC. CHAR. Obovate, sphæroidal, transversely striated; striæ elevated, uninterrupted, few, remote; aperture a little curved at the narrowest end.

READILY distinguished at first sight from the last, and indeed every other analogous species by the paucity of its striæ, which are seldom more than eight, assisted by its short, almost gibbose form: it is of the same size as C. coccinelloides.

CYPRÆA Avellana.

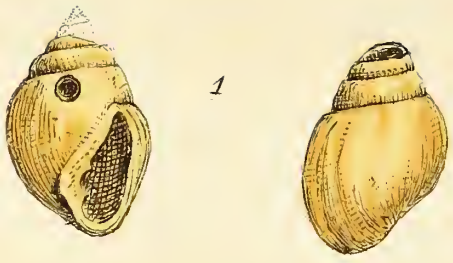
TAB. CCCLXXVIII.—*Fig.* 3.

SPEC. CHAR. Obovate, sphæroidal, transversely striated; striæ numerous, remote, elevated, interrupted by a longitudinal sulcus; aperture a little curved at the narrowest end.

CONSIDERABLY larger than either of the preceding, being as big as a hazel nut; the thickened lip forms a slightly projecting margin; the striæ that cross it are rather

sharp elevations, with flat spaces between them, many of them terminate before they reach the inner edge of the lip. There is a variety, if it be not a distinct species, about three-fourths the length, with blunter and closer elevations.

The Rev. G. R. Leathes has taken much pains to collect and distinguish the species of striated Cyprææ, that are to be found in the Suffolk Crag, and the plate before us contains some of the fruits of his labours : there may still exist two more species not clearly defined.



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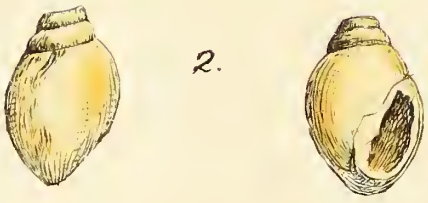

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AURICULA pyramidalis.

TAB. CCCLXXIX.

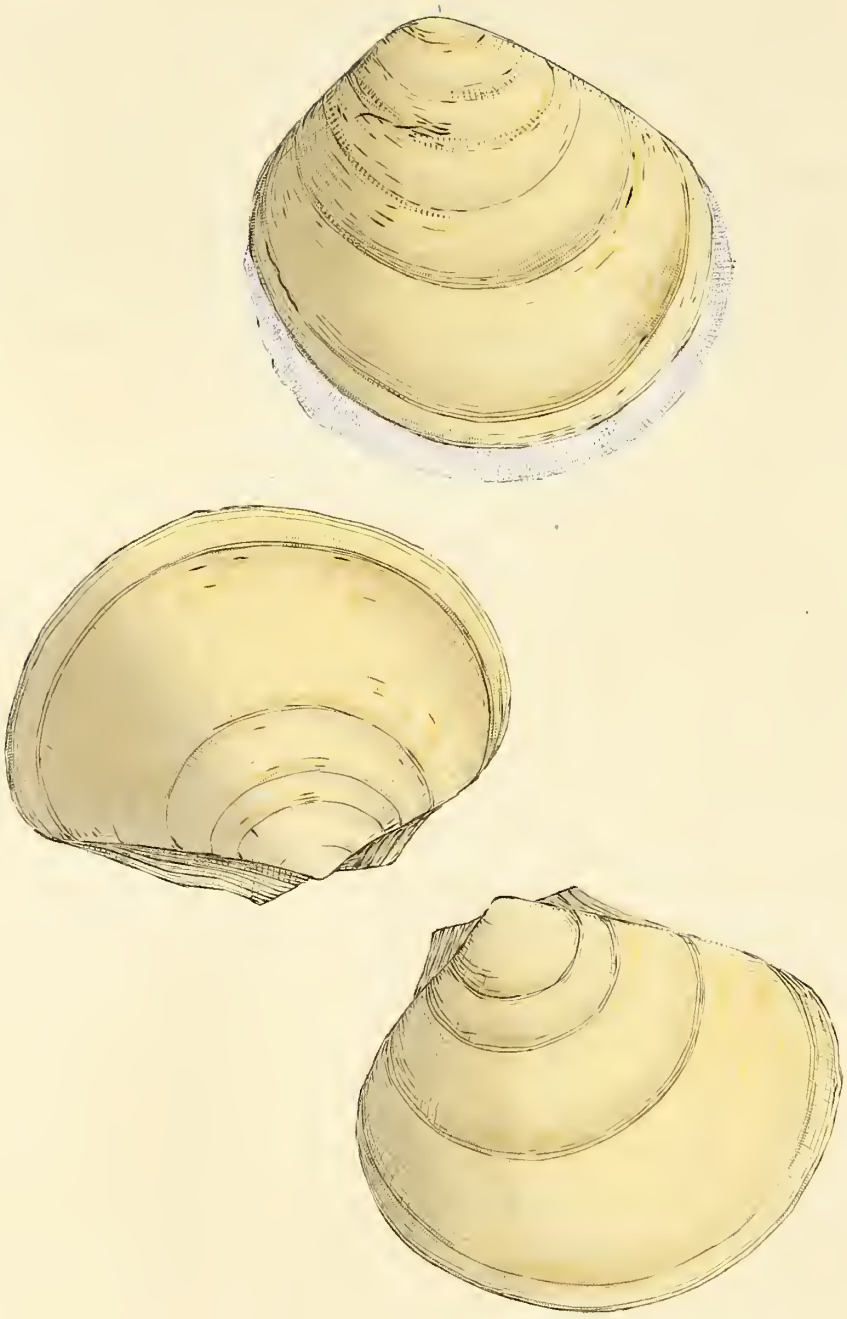
SPEC. CHAR. Ovate, pointed, smooth; spire pyramidal; volutions rounded above, the last subcylindrical short; aperture half the length of the shell, with a sharp outer lip, and two plaits upon the columella.

A THICK rather clumsy formed shell, with a prominent base and small umbilicus; the plaits upon the columella do not project much, they are near together, the inner lip is rather thickened, the outer one not at all.

As the Genus Auricula is supposed to contain only land shells, it may be questioned whether the subject of this plate be properly arranged among them; but it agrees well with Lamarck's second division, formerly called by him Conovulus; and it is not unlikely that a formation of so late a date as the Crag appears to be, should contain land shells, since it is found to hold several marine species precisely like those of the present day, although land shells have not been hitherto suspected in it. The Auricula incrassata, and A. turgida, tab. 163. found in the Green Sand, ought in all probability, to be removed to another, perhaps a new, Genus. We first received this species from Mrs. Cobbold of Ipswich, so long ago as in 1812. (see fig. 2.) but could not be

satisfied with any place in the system for it; and even now we are not certain of the propriety of placing it among land shells, for the specimen (fig. 1.) has a hole in its side, such as is frequently bored by some marine animal; this is in the Rev. Mr. Leathe's collection.

Should Lamarck's second division contain principally marine shells, as some persons suppose, and not land ones as he states, his genus Conovulus should be again received, and the fossil before us referred to it: a change that will remove the difficulties above alluded to.



PLAGIOSTOMA Hoperi.
TAB. CCCLXXX.

SPEC. CHAR. Transversely ovate, oblique; valves convex, obscurely punctato-striated; striæ diverging, deepest upon the sides; anterior slope straight, concave.

SYN. Plagiostoma Hoperi, *Mantell Geol. of Sussex*, 204, *tab.* 26, *f.* 2, 3, *f.* 15.

NEARLY smooth between the longitudinal striæ, which are very commonly so obscure as not to be traced, except close upon the sides, or near the edge: they are marked with punctums in the same manner as P. punctata; the ears are unequal, not very prominent, they are striated.

Sent me long ago by G. A. Mantell Esq. from Lewes; it occurs also at Northfleet, and other parts of the Chalk range not rarely.

I fear that a single valve of this very distinct shell, although similar in form, has been confounded with Dianchora lata, *tab.* 80. and given rise to its being described as plain, instead of striated, which the figure shews it to be; the striæ indeed are deep, but close and regular, so that the surface has a smooth aspect.

PLAGIOSTOMA rusticum.
TAB. CCCLXXXI.

SPEC. CHAR. Transversely oblong, oblique, longitudinally sulcated; valves convex; sulci deep; ears obscure; anterior slope straight, convex along the middle.

ABOUT 25 deep irregularly disposed, and often curved furrows, give the surface of this shell an unfinished clumsy appearance; the spaces between the furrows are more or less flattened or convex, and are smooth; they are irregular in width, some specimens having them widest in the middle, others at the sides of the valves; the ears, especially those upon the anterior slope, are very short, and confounded with the edge of the shell; the beaks are slightly prominent, the length is about two thirds the width.

Found in clay mixed with sand, consisting of large green grains, upon Shotover Hill, near Oxford.

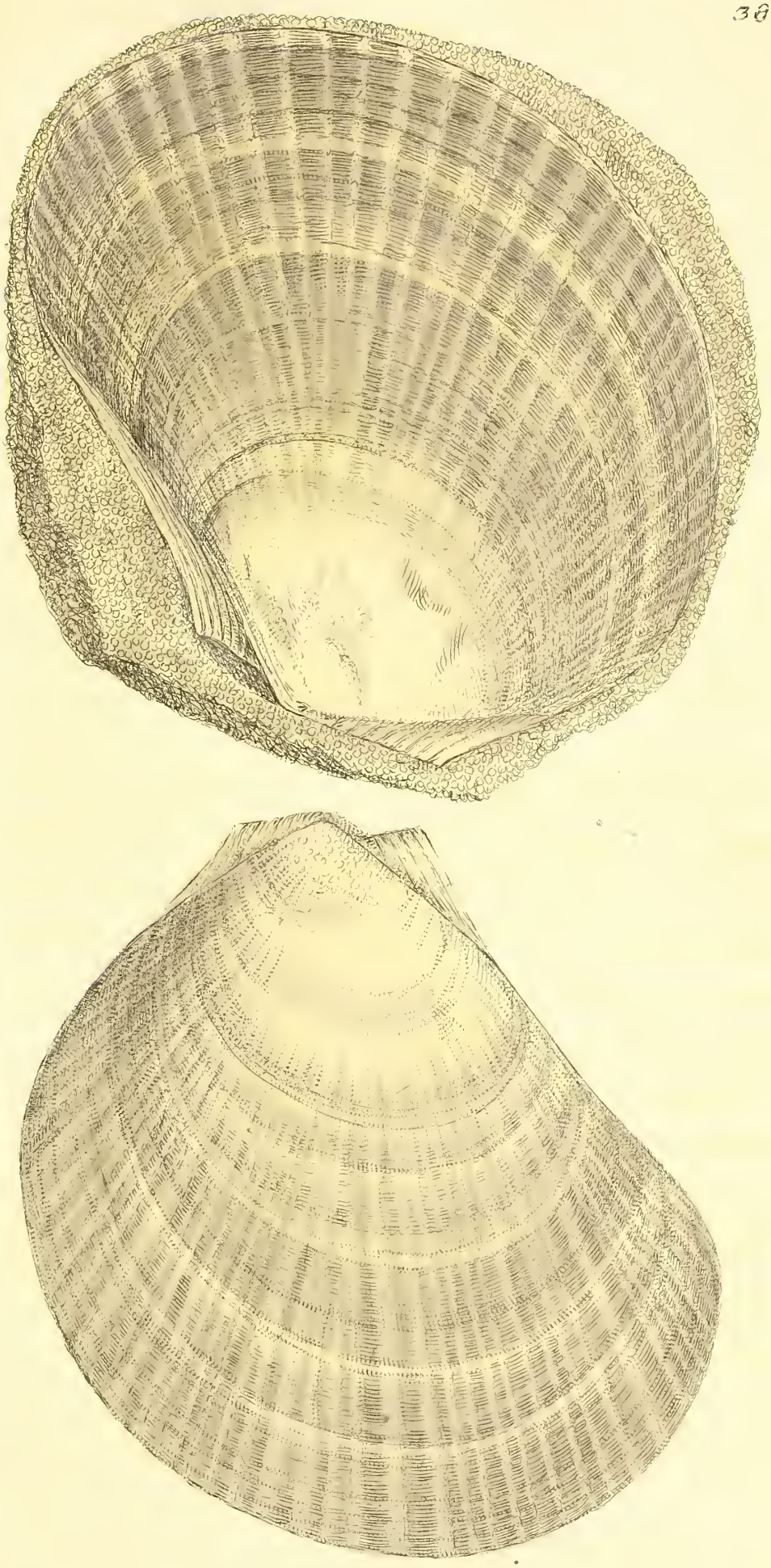
PLAGIOSTOMA lævisculum.

TAB. CCCLXXXII.

SPEC. CHAR. Transversely obovate, oblique, convex, longitudinally ribbed; ribs close, broad, irregular, very little elevated, convex; anterior slope straight, hollow; ears small, unequal.

A smooth even formed shell, distinguished by the slight elevation of its ribs, if the radiating risings can be allowed the name of ribs, and the total absence of any striæ between them; the lines of growth are numerous, but very slightly marked; the shell is thin so that the edge is undulated.

Not uncommon in the Pisolite of Malton; it is one of the many very distinct species so improperly confounded with P. rigidum by the Authors of a Geological Survey of the Yorkshire Coast, who have besides indulged themselves in changing names, and several other liberties too palpably induced by error to merit particular notice.



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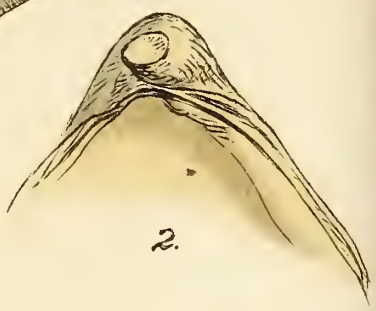

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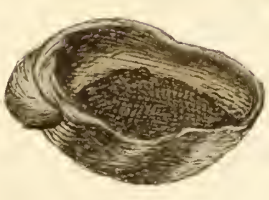

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GRYPHÆA Columba.

TAB. CCCLXXXIII.—*Fig.* 1 *and* 2.

SPEC. CHAR. Ovate rounded, expanded posteriorly, smooth; beak attenuated, incurved, oblique.

SYN. Gryphæa columba, *Lam. Hist. Nat. VI. pt.* 1. 198. *Knorr petr. Vol. III. tab. D. III. c.*

PERHAPS this is the smoothest species of Gryphæa known; except towards the margin, there is hardly a single sharp projecting line of growth to be found; the anterior lobe is small, but well defined; the left or upper valve is more or less square in form, and largely waved, its posterior edge is very thick, flattened, and striated near the hinge, every where else the edge is thin and sharp; the depth of the attached valve is about half its width; it is obtusely keelformed; the surface of attachment is very minute, at the point of the involute beak.

If we may judge by the characters of the stone this shell is preserved in, it belongs to some part of the Greensand formation contiguous to the Chalk: the only British specimen that I have ever seen, was given me many years ago by my lamented Friend Mr. Cunnington, who obtained it from Northamptonshire; it is represented in the lower figure. The upper figure is taken from a French specimen from Mans; it is in a much better state of preservation than the English one.

Fig. 2. is the variety *b* of Lamarck, with a striated beak, it is also from Mans; I have added it to shew the hinge which approaches that of Chama in appearance, since it has the rudiments of a tooth, and the hinge pit very much curved.

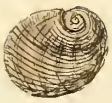
GRYPHÆA nana.

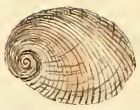
TAB. CCCLXXXIII.—*Fig.* 3.

SPEC. CHAR. Oblong ovate, rugged, gibbose, beak oblique, incurved; upper valve pointed, thick.

NOT much exceeding in size a common hazel nut; it is very variable in form, but always curved and longer than wide; its surface of attachment is sometimes very large, the hinge pit is narrow and much curved, as in the last species.

Very abundant in some parts of the Clay at Shotover, near Oxford, accompanied by Ostrea Delta, a Trigonia, and many other shells; it is probably characteristic of the stratum.





SIGARETUS, *Lamarck.*

GEN. CHAR. Shell univalved, internal, ear shaped, suborbicular; aperture dilated, entire, rounded, oblong, margin divided, inner lip thin; columella spirally curved.

A SMALL imperfect almost immersed spire, and a large expanded aperture, are common to Stomatella, Haliotis, and several other genera, from which Sigaretus is distinguished by the form of its thin inner lip applied close upon the spire, leaving a more or less conspicuous umbilicus in a slender columella, that is so united to the thick edge of the lip as to appear a continuation of it; a considerable portion of the spire is also visible within the aperture. The surface is often striated or reticulated, but has a smooth aspect indicative of its being covered by the animal. Only one fossil species appears to be known, while there are several recent ones.

SIGARETUS canaliculatus.

TAB. CCCLXXXIV.

SPEC. CHAR. Obovate, convex, longitudinally striated; spire pointed, its turns distinguished by a canal; umbilicus large.

STRONGLY resembling S. concavus of Lamarck, but much smaller, and distinguished besides by its umbilicus. The stiæ upon its surface are elevated, often undulated, and even decussated by the lines of growth: it is small and pointed.

An elegant, and I believe nondescript shell; Miss Salisbury first sent it from Hordwell in 1815; since that time I have received specimens from Miss Beminster, and especially the large one represented at the bottom of the plate; the same species also occurs in the neighbourhood of Paris and Bourdeaux.

NERITINA. *Lamarck.*

Clithon, Velates and *Theodoxis.* Montfort.

GEN. CHAR. A slender, semiglobose or oval shell, flat beneath, not umbilicate; aperture semicircular; columella lip flattened, with a sharp straightish edge; outer lip neither toothed, nor crenulated within; operculum furnished with a lateral process.

THE Genus Nerita as established by Linneus, contains many shells whose animals live in fresh water, besides such as inhabit the sea, and it has been discovered that teeth or small plaits inside their outer lips, are possessed exclusively by the latter; a circumstance that will serve, as well in fossil as in recent shells, to distinguish them by; the fresh water species are now classed under a distinct Genus, of which two fossil species are before us.

Neritina differs from Nerita very little in the general form of the shell; both genera have a peculiarly formed inner lip, that gives the aperture a semicircular form; and the operculum opens against it as a door upon a hinge. The Neritinæ have a distinct coriaceous epidermis, and are often ornamented with black stripes spots or bands beneath it; the spire is very variable, sometimes being conspicuous and even very prominent; at others very small, and even concealed. The inner lip* of the aperture is often toothed; it is placed obliquely upon the base of the columella or axis of the spire. This axis, together with the inner part of the spire, and even a part of the lip is removed by the animal in proportion as it proceeds in the enlargement of its shell, whence it appears to have no columella. Like many fresh water shells, some of the species are liable to erosion, particularly at their apices, which are providently thickened to prevent injury to the animal. The recent species are very numerous, the fossil ones all occur in the formations above the London Clay.

* Sometimes called the columella by Lamarck, although he denies a columella to the Neritacea.

NERITINA concava.

TAB. CCCLXXXV.—*Figs.* 1 *to* 8.

SPEC. CHAR. Obovate, with a prominent obtuse: spire; upper part of each whorl concave. aperture semicircular; lip entire.

THE surface of this Neritina is elegantly marked with fine zizag lines of a dark colour, that undulate so deeply as to touch each other at their angles, and thus form the resemblance of a net; the aperture is smaller, and the columella lip less flattened and blunter than in N. fluviatilis, the common recent English species, which it has often been taken for;* its markings are also generally much more minute.

A very abundant shell in some parts of the so called upper Marine Stratum of the Isle of Wight; it also occurs at Muddiford, whence the variety fig. 2. was sent me by Miss Beminster. Fig. 5. represents a mutilated specimen found at Highgate, and fig. 8. is remarkable for shewing two kinds of marking upon the same shell.

This species also occurs at Charlton, with the following, but rarely, and always in a bad state of preservation. The operculum is not known.

NERITINA uniplicata.

TAB. CCCLXXXV.—*Figs.* 9 *and* 10.

SPEC. CHAR. Subglobose, with a concealed spire, and one plait upon the rather convex columella lip.

NO variety of colour decorates this plain looking shell; the apex of the spire is indicated, in specimens that are not worn, only by a sunk point, from which a single curve runs to the aperture: worn individuals shew the turns of the spire; portions of the epidermis remain sometimes of an olive green colour.

Found abundantly in the uppermost stratum of gravel holding shells, above the bed of sand, between Charlton and Woolwich, accompanied by Melanopsides, Cyclades Ostreæ, &c. being a mixture of marine and freshwater shells: it is also to be met with at Plumstead, and near New Cross, on the banks of the Canal above the London Clay.

* This species has a kind of chamber in it discoverable by removing the end of the spire, that does not occur in the fossil, or any other recent one that I have opened.

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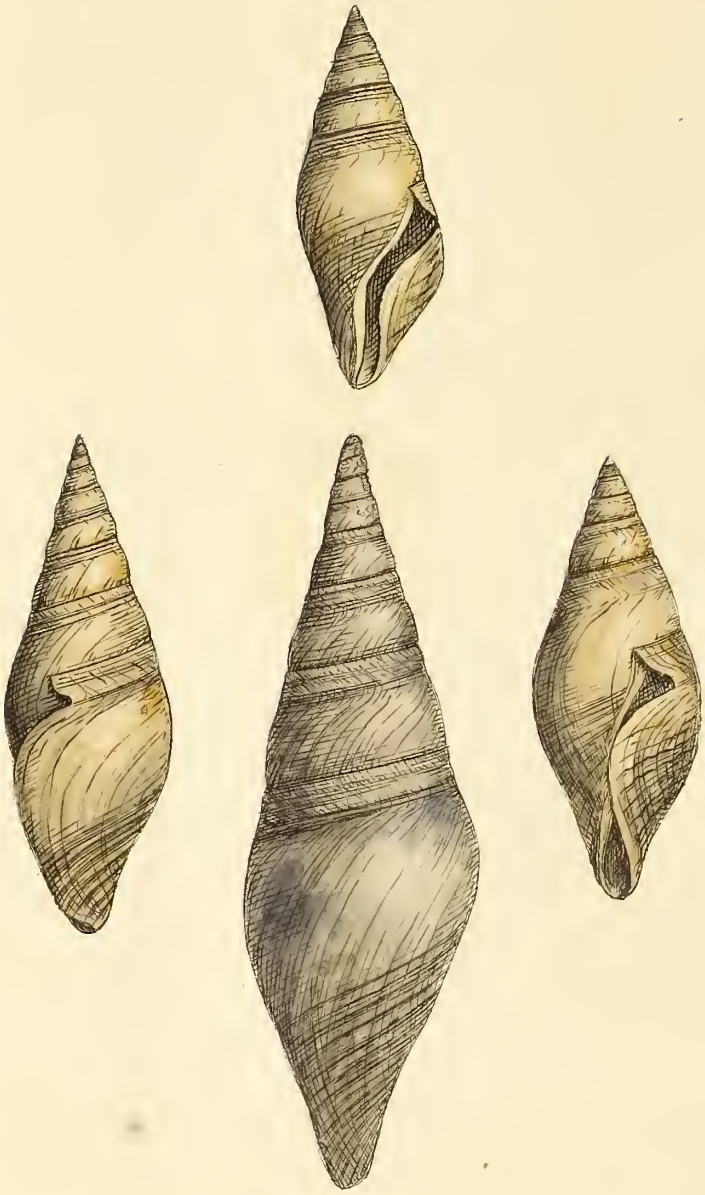

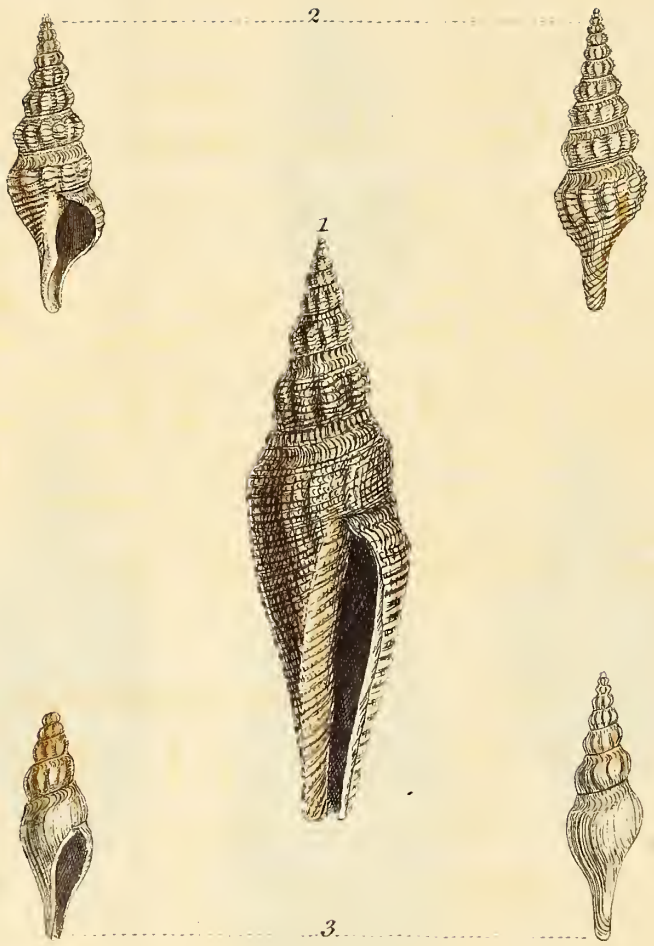
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PLEUROTOMA priscus.

TAB. CCCLXXXVI.

SPEC. CHAR. Fusiform, turreted, smooth; base transversely sulcated; margins of the whorls striated; lip wing-shaped.

SYN. Murex priscus, *Brander*, 25 *et* 44. Pleurotoma clavicularis, *Lam. env. de Paris*, 69; *Hist. Nat. des Ann. sans vert.* 7, 98.

THE whorls are slightly convex and smooth, excepting two or three hollow lines, which are most conspicuous in young shells near their upper edges; the base is drawn out almost into a beak; it is blunt and strongly striated, the lip below the sinus is nearly semicircular.

Brander's figure of this shell is far from good, and that in the Encyclopédie Mèthodique is worse. The former appears to have been overlooked by Lamarck, or he would not perhaps have changed the name.

Common at Hordwell, and near Paris.

PLEUROTOMA fusiformis.

TAB. CCCLXXXVII.—*Fig.* 1.

SPEC. CHAR. Fusiform elongated, rough, with deep transverse striæ, and obscure longitudinal costæ; whorls subcarinated, with a striated band upon their upper parts; aperture lanceolate.

THE deep striæ leave between them ridges that are roughened, but not regularly crenulated by the lines of growth; the band near the top of each whorl is nearly smooth, but it has arched striæ upon it, following the sinus in the upper part of the lip.

Found at Highgate, but rarely; I have never seen it perfect.

PLEUROTOMA brevirostrum.

TAB. CCCLXXXVII.—*Fig.* 2.

SPEC. CHAR. Turreted, acute, costated, transversely striated; aperture obovate, with a defined beak of equal length; whorls ventricose.

A sharp elegant shell, well distinguished by the shortness of the aperture and beak together compared with the length of the spire; the striæ are strongest upon the middle of each whorl; the beak is slightly curved.

Picked up at Muddiford by Lady Burgoine, to whose kindness I am indebted for the specimen figured.

PLEUROTOMA lævigata.

TAB. CCCLXXXVII.—*Fig.* 3.

SPEC. CHAR. Turreted, nearly smooth; spire subcostated; whorls ventricose, concave above; aperture elongated; beak produced.

EXCEPTING a few obscure transverse striæ and the lines of growth, this shell is smooth, the last whorl has no costæ; the length of the aperture and beak nearly equals that of the spire.

Highgate Hill has produced this species, but the individuals figured, were found along with the last at Muddiford, by Lady Burgoine.

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OSTREA Bellovacina.

TAB. CCCLXXXVIII.—*Fig.* 1 *and* 2.

SPEC. CHAR. Thick, oblong, wedge-shaped, front rounded; lower valve convex, composed of undulating laminæ, the other flat and plain.

SYN. O. Bellovacina, *Lam. Annales du Mus. VIII. p.* 159. *XIV. t.* 20. *f.* 1. *Hist. Nat. VI. pt.* 1, 218.

As usual with irregular shells; there are hardly two specimens of this Oyster of the same form; it varies from nearly orbicular to wedgeshaped; generally however, having the beak produced with a straight line on each side of it; the depth of the hollow valve is seldom considerable, both valves are thick and strong, but not remarkably so for the size of the shell; and it appears to be of quick growth; the area to which the hinge ligament was attached, is somewhat elevated above the surface of the shell; in the hollow valve it is curved and pointed, and has a deep canal in the middle; the length is about 5 inches.

Many single valves of this Oyster are to be found scattered through the uppermost beds that contain fossil shells, in the Great Sandpit between Charlton and Woolwich, they are among gravel accompanied by Cyclades, Potamides, Neritæ, and Melanopsides in abundance and rarely by Mytili and Arcæ. It does not appear to me to be the same species as the Oyster found close to the Chalk at Reading, as some Geologists have supposed; neither am I aware that the same species is found in the upper Marine stratum on the Isle of Wight, to which the accompanying shells would seem rather to refer the stratum in which it occurs at Woolwich. There is a very peculiar circumstance to be observed in such specimens as have been in contact with pebbles; there are hollows worn deep in their substance, in which the pebbles are imbedded, frequently without cracking the shells, although sometimes the shell is cracked and bent over a large pebble, as if the mass of gravel had been at

some period subjected to a great degree of intestine motion while under so much confinement that the pebbles could not move from their situations, and thus protected the smaller shells that fell into the hollows between them, while they were wearing away such as came in contact with them. Some of the older shells are worm-eaten, but no Serpula or Coraline has been found attached to them.

OSTREA edulina?

TAB. CCCLXXXVIII.—*Figs.* 3 *and* 4.

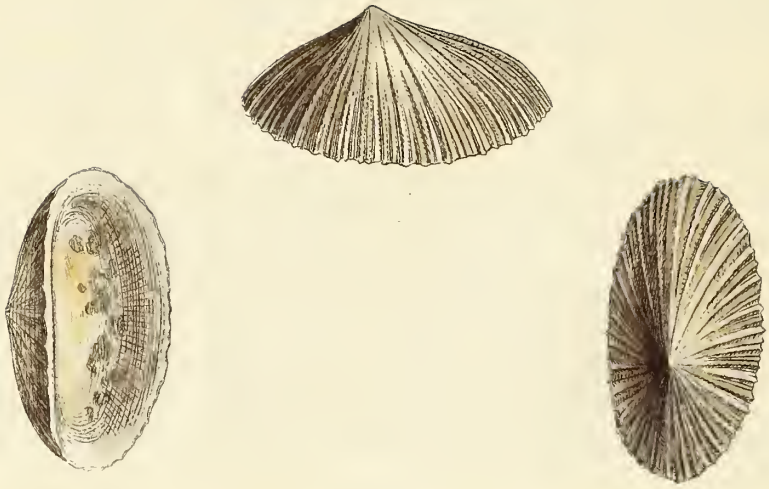
SPEC. CHAR. Suborbicular or obovate; lower valve rather concave, composed of undulating laminæ; the other smooth and flat; beak pointed, curved.

Ostrea edulina? *Lam. Hist. Nat.* 6. *pt.* 1. 218.

A smaller and much lighter shell than the last, although often approaching it in form; the great smoothness of the flat valve and the want of straight lines on the sides of the beaks will serve as distinguishing marks; when several are grouped together, they are apt to be much elongated, and then come very near to O. tener, Min. Con. 252, of which however both valves are free from undulations.

Very abundant in beds and layers alternating with fresh water shells, among dark coloured clay, forming a thick stratum free from pebbles immediately below that in which the last species occurs in the Sand-pit near Woolwich.

It is very probable that several species are included under the name *edulina* by Lamarck of which this may be one; but it is doubtful and it will ever be difficult to ascertain the point, the shells themselves are so variable.



PATELLA striata.

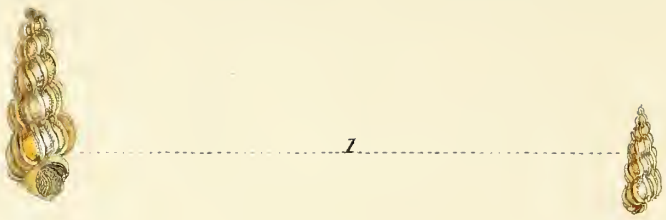
TAB. CCCLXXXIX.

Spec. Char. Oblong, irregularly conical, with numerous acute radii; umbo forward, sharp.

Remarkable for depth and a slight obliquity of form, the radii are slender, numerous, irregularly large and small, and interrupted by the lines of growth; the sides of the shell are often bent inwards, as if by pressure between the sides of a hole or crack in stone; in which case the length is double the width; young shells are nearly flat, they grow high as they encrease in size; and that sometimes without growing either longer or wider, thus acquiring a columnar form: the inside at the same time, is filled up towards the umbo. The apex is sharp, bent a little towards the front.

A single, but uncommonly large specimen of this Patella was found in 1819, at Stubbington, by Jas. Holloway Esq. in the same clay that produced the Cerithium Cornucopia. It is very abundant at Hauteville, in Normandy, but generally only half as large. I have received many specimens through the kindness of Mons.

de Gerville from thence : some of them are so distorted that their openings are less in circumference than other parts. The specific name striatus, was given by M. de France, in a catalogue he returned to M. de Gerville of the shells sent him from the neighbourhood of Valognes.



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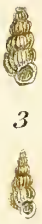

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SCALARIA subulata.

TAB. CCCXC.—*fig.* 1.

SPEC. CHAR. Turrited, subulate; volutions contiguous; costæ many, thick, reflected, the spaces between them smooth.

TEN or twelve thick, well defined costæ, that are broadest at their upper parts, decorate each of the otherways unornamented whorls of this Scalaria; these whorls are close together, although not positively united; there is no umbilicus nor cord around the base.

SCALARIA foliacea.

TAB. CCCXC.—*fig.* 2.

SPEC. CHAR. Turrited; volutions separate: costæ rather distant, slender, broad, leaf-like, reflected.

SYN. Sc. foliacea, *G. B. Sowerby, Genera of Shells, No.* 11.

SO nearly does this resemble one of the recent species of Scalaria, that it requires to be closely examined to discover the difference, the ribs are then found to be thin, sharp-edged, and only bent back in the middle, not regularly reflected along their whole length; it has no cord around the base, as in some recent species, which resemble it in having thin costæ; neither has it an umbilicus.

SCALARIA minuta.

TAB. CCCXC.—*figs.* 3 *and* 4.

SPEC. CHAR. Turrited; whorls contiguous; costæ, about 20 to each whorl, thin, obtuse, slightly elevated.

THIS is less than half an inch long, with smooth whorls, a narrow lip to the aperture and no umbilicus, it strongly resembles Sc. Clathratulus, but the costæ in that species are more numerous and sharp.

Fig. 4 is a magnified representation.

These three species of Scalaria, were found in a distinct bed of Crag at Ramsholt by the Rev. G. R. Leathes; the S. foliacea, was also found at Woodhall in Suffolk, by the same Gentleman. The great resemblance they bear to recent species is remarkable, but is a character possessed by many of the Fossils found in the Crag; many also agree with those found in the London Clay, amongst them is Sc. semicostata,* (M. C. tab. 16) fragments of which have been met with, accompanying the shells before us.

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* Probably Sc. decusstata of Lamarck.

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GRYPHÆA gigantea.
TAB. CCCXCI.

SPEC. CHAR. Orbicular, rather smooth; upper valve thin, concave; lower valve convex with a small, sharp, incurved beak; hinge small.

A large, regularly formed shell; the edges of the imbricated laminæ of the lesser valve, are but little elevated; they are even, and placed at regular intervals. The small hinge pit distinguishes this species from G. dilatata, tab. 149. The anterior lobe, is separated from the rest of the shell, by a small sinus in the edge of each of the laminæ: The length and breadth are nearly equal, the depth is about one fifth of the length.

In the description of G. dilatata, tab. 149, this shell has been unfortunately confounded with that species, owing to the want of such specimens as possessed the specific distinctions; it appears that the one before us, is confined to the inferior, or Iron shot Oolite, while variety α of the dilatata belongs to the Clunch Clay and others to the Kelloways Rock.

GRYPHÆA globosa.
TAB. CCCXCII.

SPEC. CHAR. Subglobose, oblique, smooth, thin; beak largely truncated; upper valve immersed, concave.

SYN. Ostrea vessicularis, *Lam. Hist. Nat. VI. pt.* 1. *p.* 218. *Cuvier and Brogniart, env. de Paris, ed.* 1822, 383, *tab.* 3. *fig.* 5.

Podopsis gryphæoides, *Lam. Hist. Nat. VI. pt.* 1, 195.

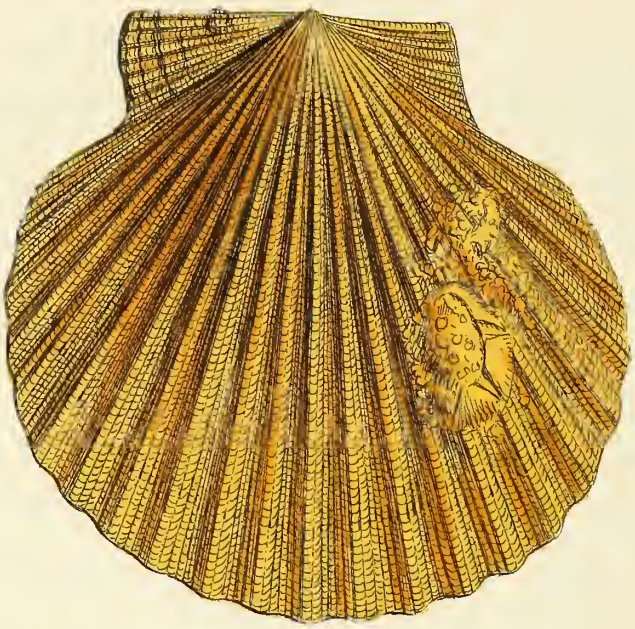
THE large surface by which this shell is generally attached entirely destroys the curved form of the beak, usually met with in a Gryphite; the free portion rises from the substance to which it is attached in a very bold curve almost forming a cup with a concave, immersed lid, but

with much obliquity and the anterior lobe strongly marked; the sides of the straight hinge frequently have teeth, or crenulations, similar to those that often occur in common Oysters; besides the principal muscular impression in each valve, there is a smaller one near the hinge, which is much more conspicuous than in any Oyster I have observed it in: this has not escaped the notice of the Artist who drew the excellent figures for Cuvier and Brogniart's Geology of the environs of Paris.

Found in Chalk wherever it occurs, and not confined to the upper beds. It is also met with in the Chalk Marl. Lamarck's unfortunate repetition of this species, under two genera has made it adviseable to give it an entirely new name; the specific name vessicularis, too nearly resembles vessiculosus, which has been used elsewhere (see tab. 369) rather inadvertently, but it is to be hoped appropriately. Brogniart's quotation of G. dilatata, M. C. 149, it is hardly necessary to observe is quite erroneous, that species never occurs in Chalk.

Our specimens are mostly from Norwich, through the kindness of the Rev. G. R. Leathes; this is the same place that furnished Smith with the specimens figured in his work upon Strata identified by Fossils.

The Genus Podopsis, to which Lamarck has referred this shell, was established by De France, and appears to include the same shells with Dianchora of Min. Conchology; in fact his Podopsis striata, is the Dianchora lata of Min. Conch. tab. 80. which being taken from an inferior specimen, was probably overlooked; the characters of the two Genera are of course the same: the shell before us having no opening in the beak cannot be a Podopsis.



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PECTEN sulcatus.

TAB. CCCXCIII.—*Fig.* 1.

SPEC. CHAR. Obliquely orbicular, with 20 obscurely tripartite rays, the intermediate spaces longitudinally striated, the whole rough with minute scales; internally sulcated; ears nearly equal.

VALVES nearly equal, convex, shorter than wide, with 20 rounding rays; each ray is composed of about three scaly ridges, and between each ray are several lesser, but equally rough ridges, within are 20 furrows corresponding to the external rays; the margin is toothed.

A common Crag Fossil, generally known by the name of P. opercularis, although sufficiently distinct from the recent species so called; the internal furrows are a conspicuous character, besides which the striæ upon the ribs are sufficient to distinguish them. There is a species from New South Wales more nearly allied, but in it the spaces between the rays are flat, and transversely striated, but not scaly.

Very abundant in the loose Crag at Aldborough, but rather scarce in the more compact Crag of Sudbourn, and other parts of Suffolk.

PECTEN gracilis.

TAB. CCCXCIII.—*fig.* 2.

SPEC. CHAR. Orbicular, thin, convex, with many small, longitudinal ridges; concentrically striated; striæ close, elevated, sharp; ears unequal; margin entire.

LONGER than wide, every fourth ridge is rather more elevated than the rest, and has an opposed grove within the valve, that is much more conspicuous than those, which, on account of the thinness of the shell, are formed by the other ridges; the striæ are pretty uniform over the surface, and not divided into scales, they are however strongest near the margin.

Two specimens, but of the same valve found in the Crag near Ipswich, were formerly added to my cabinet of Fossils by Mrs. Cobbold, they are extremely fragile.

PECTEN striatus.

TAB. CCCXCIV.—*figs.* 2, 3 *and* 4.

SPEC. CHAR. Oval, convex; valves nearly equal; with numerous smooth or scaly ridges; within plain; margin entire; ears unequal, rather large.

THE width is five sixths of the length; the ridges are irregular, but nearly equal. In some specimens they have rather distant obtuse crenulations, or scales upon them; in others they are wholly smooth, perhaps from wear: the shell is rather thick and shews within it but slight signs of the ridges.

Found in the Crag at Holywells, by Mrs. Cobbold, and at Woodbridge by the Rev. Mr. Leathes: the specimens with scales upon the ridges, differ in no other respect from the smooth ones, and both are found of various sizes; it is possible the latter may have been worn before they were changed into Crag.

PECTEN nitidus.

TAB. CCCXCIV.—*fig.* 1.

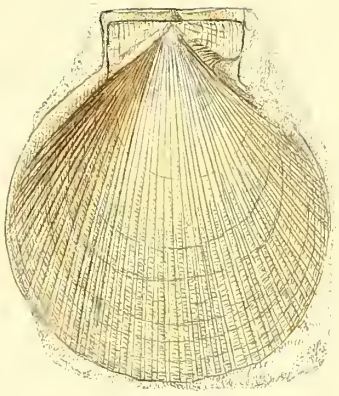
SPEC. CHAR. Obovate, one valve nearly flat, with numerous, nearly smooth ridges, the interstices minutely striated transversely, the other valve convex with as many crenulated ridges; margin entire; ears nearly equal.

SYN. Pecten nitida, *Mantell Geol. Sussex, p.* 202. *tab.* 26. *f.* 4 *and* 9.

Pecten cretosus, and P. arachnoides, *De France, Brogniart and Cuvier Geo. de Paris* 383 *and* 384. *tab.* 3. *f.* 7 *and* 8. *ed.* 1822.

A rather broader shell than the last, much resembling it, but well distinguished by the fineness of its concentric striæ, the flatness of one valve, and thinness of both valves; the ridges upon the convex valve are decidedly crenulated or granulated, while those of the other are mostly smooth, a circumstance that has apparently led Mr. De France to make two species of them.

By no means a rare Shell in Chalk, but so excessively thin that it is seldom found perfect; the dissimilarity of the two valves is proved by specimens in which they still remain applied together, probably M. de France never met with a pair, or he would have observed this; the flatter valve is sometimes nearly as convex as the other.



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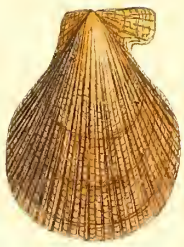

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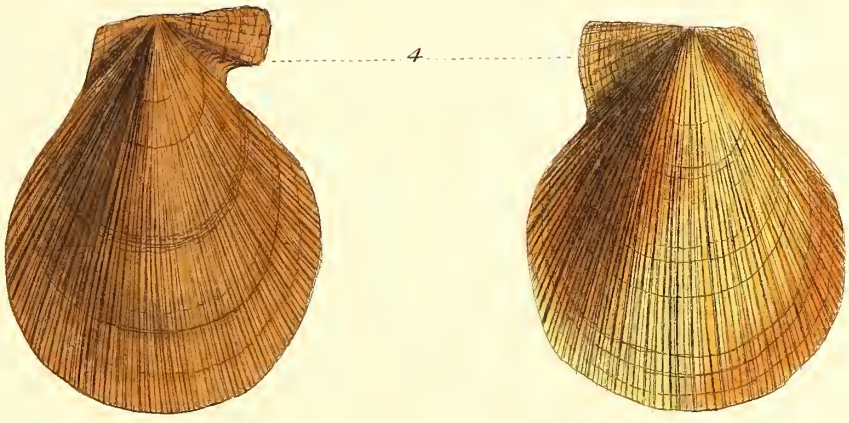

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TURBO moniliferus.

TAB. CCCXCV.—*fig.* 1.

SPEC. CHAR. Short, conical, transversely striated, umbilicated; whorls separated above by a canal, their edges granulated; umbilicus large, wrinkled.

THE length and breadth of this shell, are nearly equal; the base is rather conical; the striæ are prominent, simple upon the base, but granulated and less numerous upon the spire; the umbilicus is granulated within, the edge of it is undulated.

The large umbilicus would induce us to place this species under the Genus Delphinula, were the lips of the aperture separated from the preceding whorl: it is found replaced by Calcedony, in the Greensand of Blackdown in Wiltshire.

TURBO sculptus.

TAB. CCCXCV.—*fig.* 2.

SPEC. CHAR. Conical, with minute longitudinal striæ and deep transverse sulci; whorls rounded, separated above by a canal; umbilicus small; aperture sulcated within.

SYN. Turbo sulcatus, *Pilkington, Linn. Trans. VII. p.* 118. *tab.* 11. *fig.* 9.

VERY similar in form to Cyclostoma elegans: the aperture is obovate rather than round, thus it is not strictly a Turbo; it has not the reflected margin of a Cyclostoma, but has a small slightly recurved expansion near the umbilicus, similar to that part of the lip in Scalaria. The upper part of the aperture has an angle corresponding with the upper edges of the whorls; the length is greater than the width.

Not rare at Barton; I have received good specimens from several kind Friends. It has been necessary to change the specific name given by Mr. Pilkington, for it has already been twice used in the same Genus by Gmelin, &c.

The two shells before us do not, it must be owned, agree precisely with the characters of the Genus Turbo, as they are given by Lamarck, but the discrepancy is not sufficiently great to warrant the placing them in any other, they form a passage towards Delphinula, from which however the sculptus is quite distinct, and they are so nearly allied to each other, that it would be doing a violence to nature to separate them.

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VOLUTA Athleta.

TAB. CCCXCVI.—*figs.* 1, 2, *and* 3.

SPEC. CHAR. Rhomboidal, ventricose, acute, crowned with large spreading spines; base obscurely sulcated; columella with 3 unequal folds; lip plain within.

SYN. Strombus Athleta, *Brander* 66.

A SHORTER and smoother shell than V. Luctator, from which it may also be distinguished in all ages by its large spreading spines, smooth and rather ventricose body, with irregular costæ; when full grown it is smaller than Luctator, but thicker in proportion; the edges of the whorls in young shells, have a few imperfect spines, besides those upon their upper parts. Middling sized specimens of this Volute are common at Barton; large ones like *fig.* 3. are scarce; I am indebted to the Rev. T. Cooke for the one there represented. It does not appear to be known in France.

VOLUTA depauperata.

TAB. CCCXCVI.—*fig.* 4.

SPEC. CHAR. Ovato-rhomboidal, acute, costated, crowned with one series of erect spines; base sulcated; columella with one fold; lip smooth within.

SYN. Strombus Luctator, *Brander* 67.

STRONGLY resembling V. spinosa, but furnished with only one row of spines around each whorl, and they are a little flattened; it has a few yellowish stripes across it, like the French specimens of V. spinosa.

First distinguished by Miss Beminster, to whom I am indebted for the specimen: it was found at Barton. We have but little doubt of the above Synomina being correct.

VOLUTA Luctator jun.

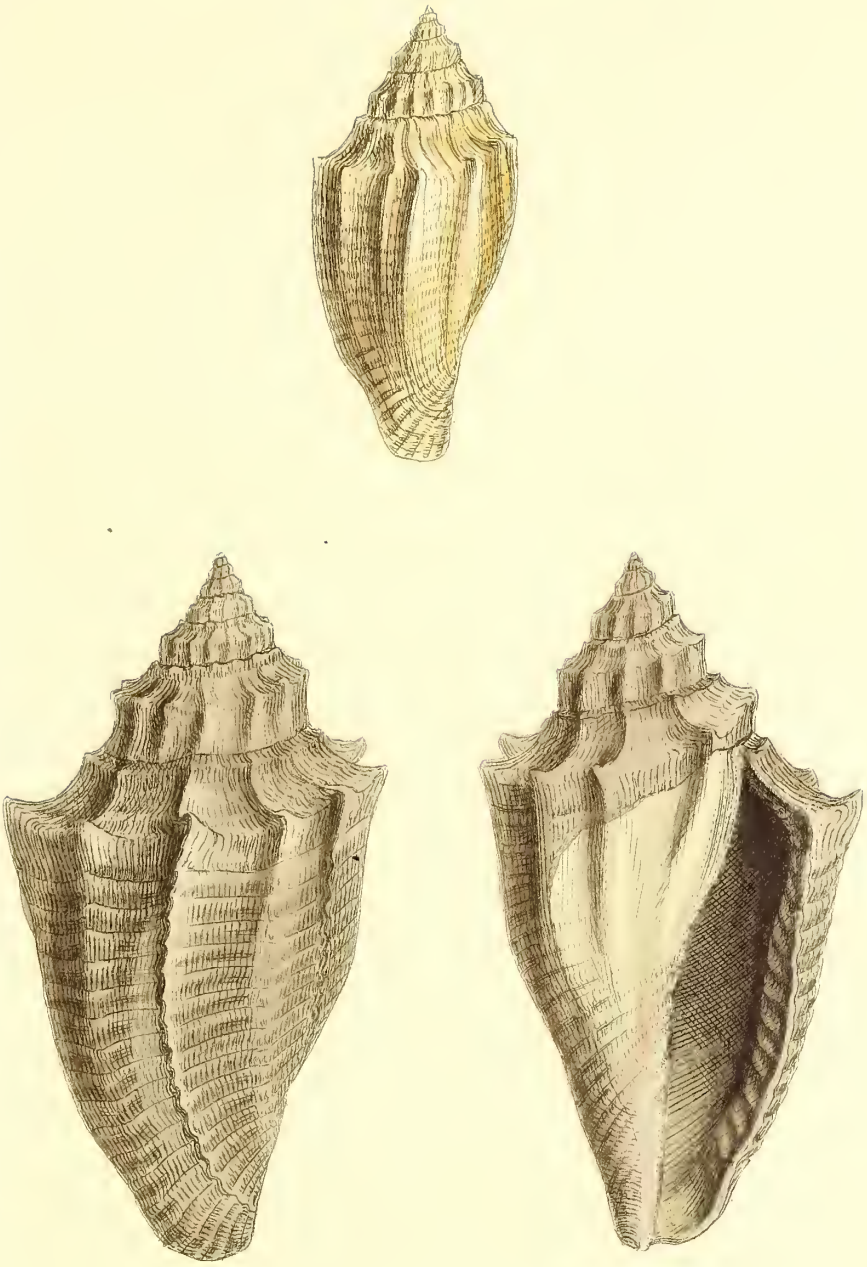
TAB. CCCXCVII.

SPEC. CHAR. Ovato-elongated, acute, costated, crowned with one row of large and another of small, short, acute, spines, transversely sulcated; columella with three or more folds; lip often plaited within, its edge crenulated.

SYN. Strombus dubius, *Brander* 68. V. Luctator *Min. Conch.* 115, *f.* 1.

A HANDSOME regularly formed shell, covered uniformly below the spines, with broadish flat furrows and minute longitudinal striæ, or lines of growth; the superior row of spines consists of small and irregular ones; the last whorl is not ventricose.

Very abundant at Barton: the only actual difference between the Voluta dubia, and the Luctator *fig.* 64. of Brander, appears to consist in the plaits within the lip; a series of specimens from the figures before us, to figure 1 of table 115. and even larger is easily obtained, in which most of the small and middle sized ones will be found to have plaited lips, while in the large ones the lips are smooth and thin, but even in these there are sometimes indications of plaits, especially at some distance within the edge, leaving the only character very equivocal. Athough Lamarck quotes Brander's S. Luctator, his V. musicalis is a longer and quite different shell, a circumstance we were not aware of, when we figured the former. Brander himself, or Solander, has confounded V. spinosa, which Lamarck has properly separated, and V. depauperata, above described, with Luctator, although they are both more ventricose, and have no furrows upon the upper parts of their whorls; for the contrary reason the V. spinosa β. of Min. Conch. tab. 115. *fig.* 3. ought perhaps to be considered a species rather than a variety; there occur however intermediate forms.



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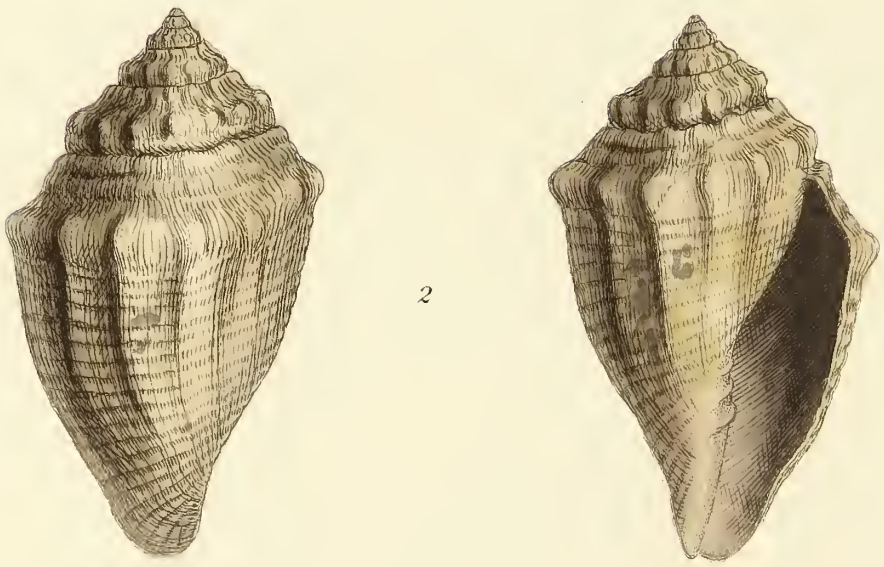

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VOLUTA ambigua.*

TAB. CCCXCIX.—*Fig.* 1.

SPEC. CHAR. Ovato-elongated, acute, costated, transversely sulcated; costæ angular, above; spire rough; columella with three plaits; lip plaited within, its edge granulated, aperture narrow above.

SYN. Strombus ambiguus, *Brander* 69.

RATHER longer shaped than the young of V. Luctator, in consequence of the narrowness of the aperture at the upper part; the spire is made rough by a row of small imperfect spines upon the upper edges of the whorls and the angles upon the tops of the costæ.

A distinct and easily recognized shell, although very like the last. It abounds in the Cliff at Barton. Brander's most excellent figure is from a younger individual than the one purposely chosen for the present table, and has consequently the parts sharper defined. It is not sufficiently clear that Lamarck's V. bicorona is the same species; I have never met with the true V. ambigua from France.

VOLUTA nodosa.

TAB. CCCXCIX.—*fig.* 2.

SPEC. CHAR. Ovate pointed, obscurely costated, transversely sulcated; spire with two rows of nodiform spines; columella with three folds; lip striated within.

THE very blunt short spines, deep and numerous sulci, and oval form at once distinguish this Volute.

Discovered above a twelvemonth ago, by Miss Beminster in the Barton Cliff; the specimen figured enriches the cabinet of the Rev. T. Cooke; one sent by Miss Beminster is not quite so ventricose; in its young state the knobs are more conspicuous, particularly the row of smaller ones upon the edges of the whorls.

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* Voluta ambigua Min. Conch. t. 115. 5. is Murex suspensus of Brander, see its Sp. Char. p. 137.

VOLUTA geminata.

TAB. CCCXCVIII.—*fig.* 1.

SPEC. CHAR. Ovate, ventricose, pointed, costated; costæ terminated by two obtuse connected spines; columella with one large and several small plaits, curved.

REMARKABLY ventricose, with very prominent ribs; it differs from Voluta Cithara of Lamarck, in general form and size, but particularly in its fœtal state, in which it is very minute and pointed, as may be seen upon the apex of the spire.

Discovered by Charles Lyell, jun. Esq. in Clay pits at Lyndhurst, Hants. It also occurs in the neighbourhood of Paris, but does not appear to have been described.

VOLUTA Lima.

TAB. CCCXCVIII.—*fig.* 2.

SPEC. CHAR. Ovato elongated, acute, costated, and transversely striated; costæ numerous, dentato-crenated; upper edges of the whorls toothed; columella with three unequal folds; lip smooth within, its edge crenulated.

SYN. Buccinum scabriculum, *Brander*, 71.

BETWEEN the teeth upon the edges of the whorls and the upper ends of the costæ is generally a broadish, flat, or concave, space, and around the spire is a canal which separates the edges of the whorls.

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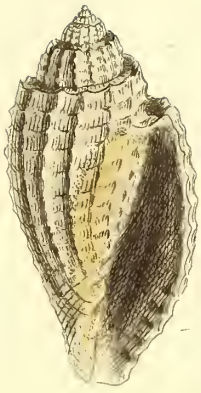

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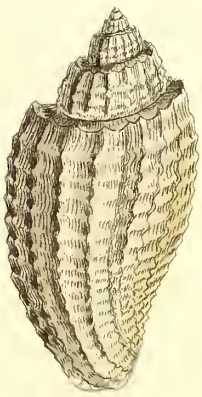


Voluta crenulata of Lamarck is a much larger shell, and has no canal round the spire, in other respects it so nearly resembles this, that it is strange Lamarck should refer to Brander's Murex suspensus, rather than to his Buccinum scabriculum, as synonimous with it.

An extremely common shell at Barton. We are obliged to change Brander's name, not only because he has used the same for another shell, but because also they both differ from that to which Linneus applied the name, and to which Brander refers.

VOLUTA suspensa.

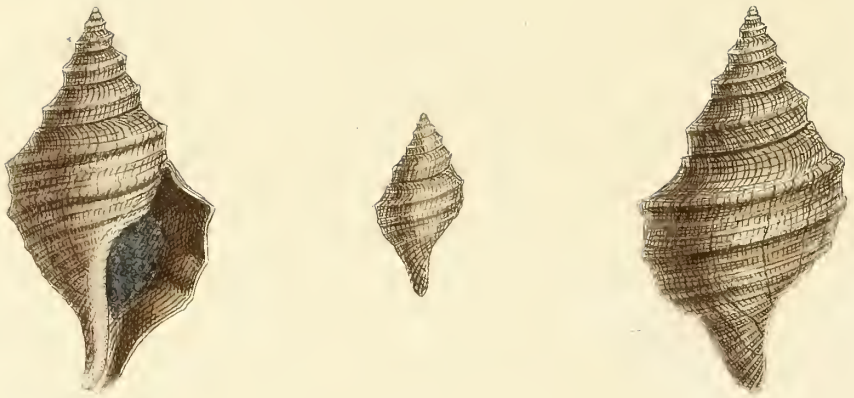
Vol. 2.—TAB. CXV.—*Fig.* 5.

SPEC. CHAR. Ovate, pointed, obscurely costated, transversely striated; spire with a broad canal around it bounded by an erect, flat, dentated crown; base produced.

SYN. Murex suspensus, *Brander*, 70.

THE striæ around the base are sharply elevated, the rest more distant and sunk except the one, at the top of the ribs which rises in minute sharp spines.

We are indebted to the Rev. T. Cooke, for a specimen of this rare Barton shell, that proves what we formerly called a monstrosity of Voluta ambigua, to be the Murex suspensus of Brander, but his figure is so small, that its characters are obscure. The above description was therefore necessary to complete the account of the Genus Voluta, and must consequently supply the place of that before given with the figure.



FUSUS errans.

TAB. CCCC.

Spec. Char. Oblong-ovate, conical at both ends, transversely striated; whorls bicarinated; upper carina largest.

Syn. Strombus errans, *Brander*, 42.

Besides the principal carinæ, there are several lesser intermediate ones that do not materially interfere with the general outline; the transverse striæ are elegantly decussated by minute lines of growth, especially above the largest carina; the aperture is oblong, angular towards its upper part; the columella nearly straight; some specimens are less ventricose than others, but all of them have more than one keel, by which, and its size this species differs from F. bifaciatus (M. C. t. 228.

Not a very common production of Barton or Hordwell Cliffs; Miss Beminster has however liberally supplied us with a series.

J. Holloway Esq. has also found it at Stubbington, and sent me several individuals filled with Pyrites.

It appears to be unknown in France.

Mitra, Lamarck.

Gen. Char. A turreted subfusiform univalved shell, with an acute spire, a notched but not chancelled base; and parrallel plaits, of which the lowest are smallest, upon the columella; inner lip of the aperture thin, connected with the columella.

This Genus is composed of shells, long ago recognized by Collectors as different from Volutes, and appears to be a very natural one, distinguished by the elongated subfusiform contour of its members. The plaits upon the columella form the essential character; but the pointed apex, upon which so much stress is laid by Lamarck, can hardly be admitted as a distinguishing mark, since we find it very serviceable as a specific distinction between Volutes, otherways very nearly related together, and wholly unlike Mitres (see V. geminata, t. 398.)

The recent species are often very elegantly colored, and variously ornamented with striæ, tubercles, &c. they have a thin epidermis.

Fossil species are numerous abroad, but only one English species has been described; even that if we were willing to multiply Genera, might perhaps form with M. monodonta, a new Genus.

MITRA scabra.

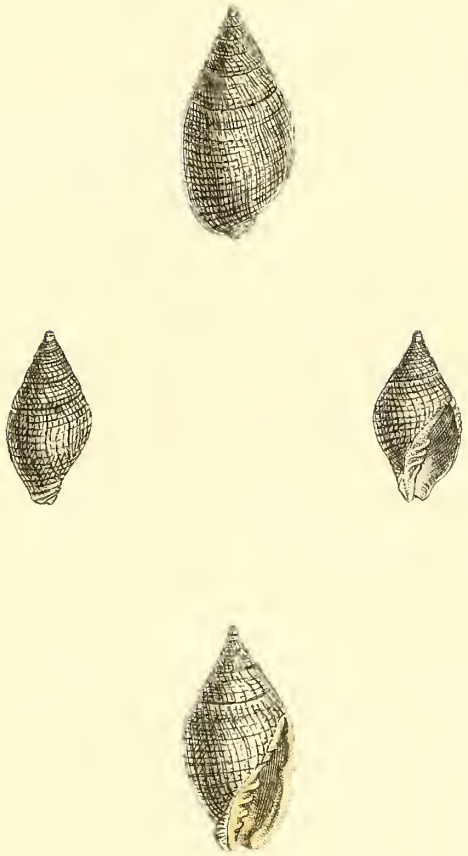
TAB. CCCCI.

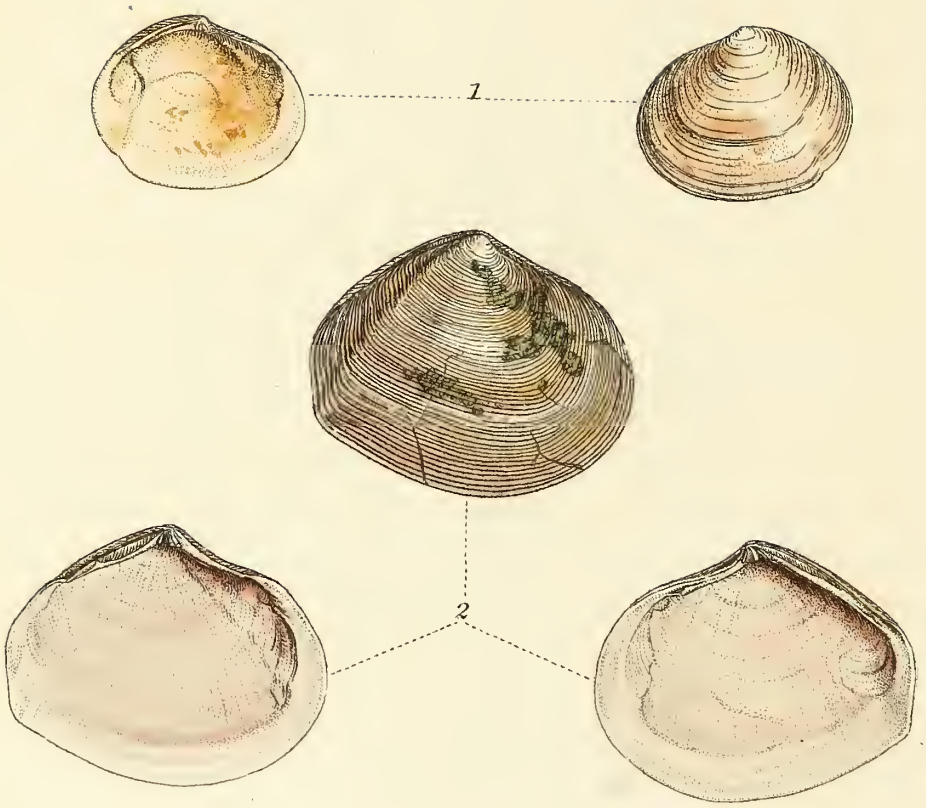
SPEC. CHAR. Ovato-fusiform, rough with decussating striæ; lip thickened, with one obtuse tooth upon its margin.

SYN. Buccinum scabriculum *Brander, f.* 20.

SHARP, elevated, transverse striæ, crossing many irregularly elevated undulations and lines of growth, render this a rough shell; the principal folds upon the columella are four, not very unequal in size; above them are two slender ones, which however are often wanting: the thick lip is remarkable, especially as it is so irregularly thickened, that the part opposite the two smallest plaits, is thinner than any other; and immediately below it is so thick as to form a kind of blunt tooth: in this it agrees with Mitra monodonta of Lamarck, a very similar but smooth fossil: the apex of the spire consists of two smooth whorls, and is nearly globular, being the form of the shell in the egg; M. monodonta has the same conformation. When young the lip is thin.

A common shell at Barton; the Rev. T. Cooke favored me with the use of a particularly perfect specimen, from which the larger figures are taken. It is very different from the Voluta (Mitra) scabriculum of Gmelin, to which Brander has referred.

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TELLINA Branderi.

TAB. CCCCII.—*fig.* 1.

SPEC. CHAR. Obovate, depressed, smooth, with a small sinus on the anterior margin; beak rather prominent.

SYN. Tellina bimaculata, *Brander, f.* 102.

NOT quite equilateral, the posterior side is longest, and also most regularly rounded; the marginal fold forms a slight sinus; it differs from the recent T. bimaculata in the form of the anterior side, which is rounded, not truncated, and in several particulars observable on comparison.

As I have only met with a single valve of this shell, I suppose it is rare. The Rev. G. Cooke, kindly sent it from Barton.

TELLINA filosa.

TAB. CCCCII.—*fig.* 2.

SPEC. CHAR. Obovate, depressed, transversely striated; anterior side angular; posterior rounded; striæ elevated, acute, numerous, enlarged anteriorly.

A SLENDER Tellen covered with concentric striæ resembling very fine threads; the marginal fold forms a slight elevation that ascends to the beak, and as the striæ pass over this elevation, they are thickened, curved, and compressed; there is a slight truncation of the edge near the fold, but no sinus. This appears to be a species between T. patellaris, and scalaroides of Lamarck.

Found in the sandy Clay at Barton, by the Rev. T. Cooke, by no means common.

TELLINA ambigua.

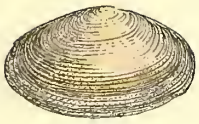
TAB. CCCCIII.

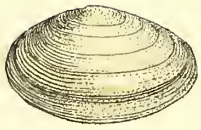
SPEC. CHAR. Oval-elongated convex, obscurely sulcated; right valve thickest, curved, and with only one hinge tooth.

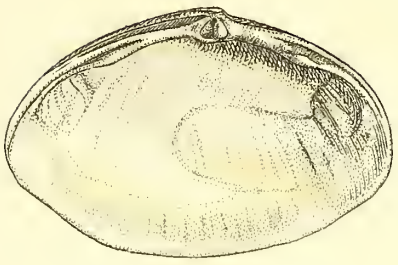
NEARLY twice as wide as long, rather unequalvalved; the right valve is more convex, and thicker than the other; both extremities are equally rounded, and the beaks are not prominent; the remote teeth are obscure in the right valve, but very prominent in the other: the marginal fold is very obscure, it may however, be traced in the left valve; the sulci are always deepest about the sides, but are sometimes almost obliterated.

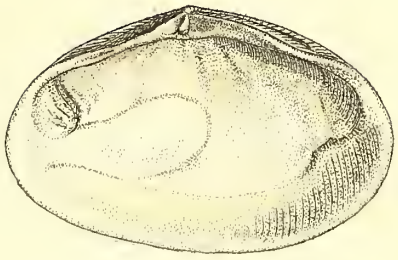
In its general aspect, this much resembles a Psammobia, (tab. 342.) but the lateral teeth and sinus in the impression, distinguish it from that Genus; whether it be a genuine Tellina, may remain a doubt: Brander's fig. 93, may possibly be meant for it, but as it differs much in form, I would not venture to refer to it.

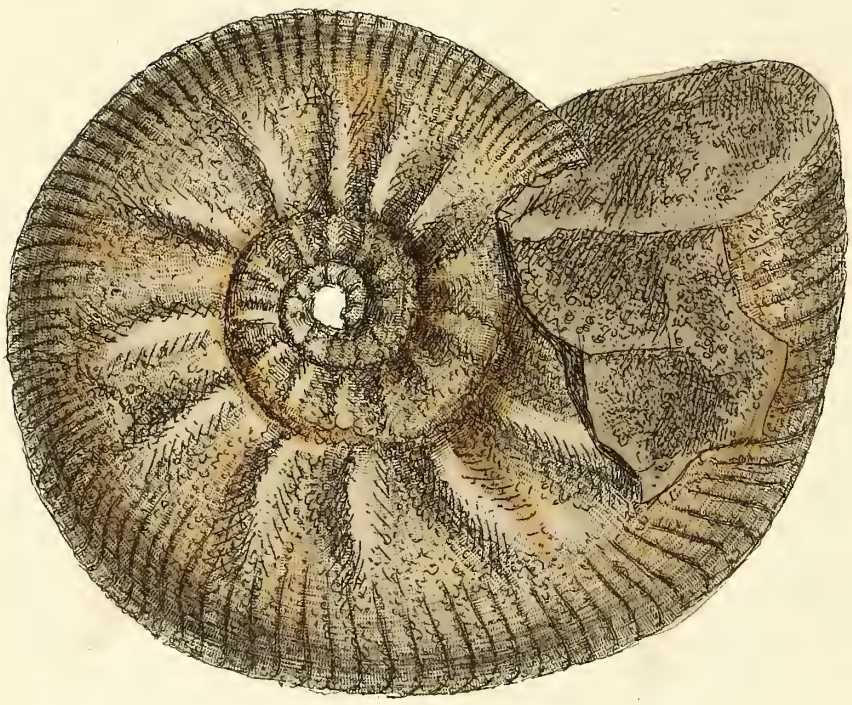
Sent by several Friends from Barton Cliff, where it must be common: it appears to be gregareous, and is mixed with an abundance of Mya plana, (tab. 76.) Professor Sedgwick also found it in Colwell Bay, on the Isle of Wight.

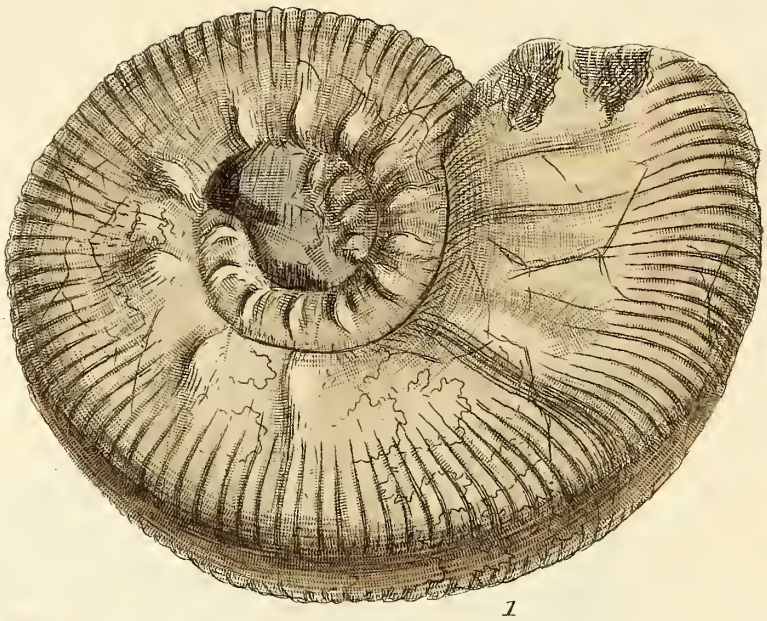












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AMMONITES Plicomphalus.

TAB. CCCCIV.

This figure represents the young state, or what amounts to the same thing, the inner whorls of an Ammonite formerly given at tab. 359, but has so different an appearance, that it would not be suspected to be the same, were they not found united in one specimen, which has been proved by breaking the one first figured; and shews the necessity of adding to the specific character that the front is, *in the young state transversely furrowed.* This specimen is also from Bolingbroke.

AMMONITES mutabilis.

TAB. CCCCV.

Spec. Char. Depressed; outer whorls compressed, plain and smooth; inner whorls two thirds exposed, tuberculated, plicated; plicæ interrupted over the front; aperture ovato-sagittate.

In the young state, the front of this Ammonite, has a narrow, flattened space around it, from which numerous very neat plicæ spread half way over the sides; next to these, a single row of compressed tubercles is placed, the inner margin of the whorl is smooth: when the shell is about two inches in diameter, the tubercles cease to be formed; but the plicæ continue until it is six inches over, when they also gradually disappear, the front becomes rounder, and the sides quite plain, and compressed rather obliquely towards the front, so as to give the aperture a blunted sagittate form; the septa are rather close, and sharply sinuated; the shell pearly; there are at distant intervals contractions in the whorls, that have been probably formed by an inflected or thickened lip, at successive periods of growth.

The figures represent a small individual shewing the ornamental part of the shell, and a portion of a large specimen, measuring ten inches in diameter, and of which the greatest thickness is an inch and an half; I am indebted to George Wier, Esq. for them, they were produced by the Clunch Clay near Horncastle.

There appears to be no regular rule amongst Ammonites for their change of form, some becoming more

globose, and others more compressed by age; but they generally lose some of the ornaments from their last whorls, and in their infant state are also smooth, or free from tubercles, bearing some analogy to the higher orders of the animal creation, whose middle ages are generally the most beautiful. No species perhaps undergoes a greater change than the one before us, wherefore it is named mutabilis.

AMMONITES subarmatus.

TAB. CCCCVII.—*fig.* 1.

SPEC. CHAR. Depressed, concave, ribed, inner whorls almost wholly exposed; ribs curved, often united in pairs by smooth spines; aperture transversely oblong, arched.

SYN. Ammonites subarmatus, *Young and Bird, Geol. of Yorks.* p.* 250. *t.* 13, *f.* 3.

UPON the last formed whorls of this shell, the spines disappear, and the ribs which in the former whorls are generally split before they pass over the front, are not so often divided; the spines continue nearly to the centre, they are hollow, and leave when the shell is removed, a blunt cast, but not a truncated tubercle as in the A. fibulatus; the whorls have convex sides and encrease rather rapidly; they are contracted in some parts, in the same manner as the last.

It is probable that there are several species allied to this, but it will require numerous specimens of each to prove that they are not varieties: the A. perarmatus† of Young and Bird, is one thus doubtfully situated, but most probably it is a variety of the subarmatus.

Found at Whitby.

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* It is hoped that the late Mr. Sowerby's veracity and credit, need no defence against the attacks and false surmises of the arrogant, the Authors of the Geological Survey of the Yorkshire Coast, had not been further noticed, but that, when names are given to shells, their Publishers must be quoted, and where any merit exists, it should not be overlooked.

†We had not seen the Geol. of the Yorkshire coast, when A. perarmatus, tab. 352 was published.

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AMMONITES fibulatus.

TAB. CCCCVII.—*fig.* 2.

SPEC. CHAR. Depressed, ribed; inner whorls almost wholly exposed; sides of the whorls flattened, their inner margins plain; ribs numerous, united in pairs by smooth spines; aperture oblong.

SYN. Ammonites armatus? *Young and Bird, Geol. of Yorkshire, p.* 250, *t.* 13, f. 9.

THE remarkable flatness of this shell, is encreased by the spines filling up at intervals, the concave space around the whorls; there are now and then, ribs that pass over the front without uniting with spines, these ribs are more numerous in the latter whorls, and even alternate with the spines; each rib when it leaves the spine is found divided into two, so that there are a greater number passing over the front, than exist upon the sides.

Found at Whitby, where it is not of very rare occurrence. The smooth spines distinguish it well from A. armatus of Min. Conch. tab. 95. but like it they are composed of solid shell, and when broken off, leave a flat-ended tubercle, compared, together with the ribs, by Young and Bird, to a button and loop, whence its name.

AMMONITES Smithi.

TAB. CCCCVI.

SPEC. CHAR. Depressed, ribed, and keeled; inner whorls few, almost wholly exposed; ribs slightly curved; keel obtuse; sides flattened; aperture oblong.

A BEAUTIFUL pearly species that seldom acquires a diameter of two inches; the flatness of its last whorls, distinguish it, independently of size, from others similarly figured; in its infancy, (see fig. 1.) it is wholly plain and almost globose, with an umbilicus; as it grows, its ribs appear gradually in short risings near the umbilicus; the keel is next formed, and at length the whorls assume their flat shape, and the ribs their full extent; figs. 2, 3 and 4.

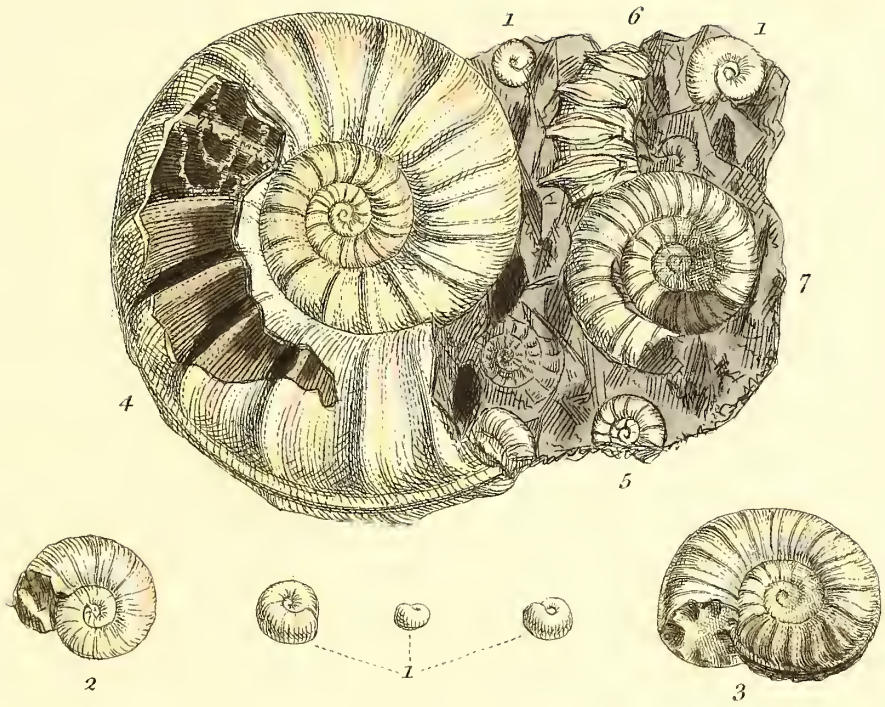
Occurs sparingly dispersed through the same stone as A. planicostatus* (tab. 73,) and is mentioned at p. 168 of Vol. I.

This is named in honor of Mr. W. Smith, the Author of a Geological map of England, &c. whose discovery of the regular succession of the strata, and the means of distinguishing them by their organized contents, has laid the foundation for all our Geological knowledge of England.

I have taken this opportunity of adding a portion of the outer whorl of an old shell of A. planicostatus, (see fig. 6.) to shew that by age it acquires spines upon the sides of the flattened portion of each rib, a circumstance that ought to be noticed in the specific character.

Figs. 5, 6, and 7, are several states of A. planicostatus.

* So the name should have been spelt.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CORRIGENDA.

We are indebted to Mr. Farey, for pointing out to us that several names given in the course of this Work, had been used before by other Authors; we therefore are obliged to alter them, which we propose to do as follows.

Cerithium Melanioides tab. 147 to be Potamides politus.

Trochus concavus tab. 181 —— T. angulatus.
granulatus tab. 220 —— T. arenosus.
sulcatus tab. 220 —— T. prominens.
bicarinatus tab. 221 —— T. Tiara.
ornatus tab. 221 —— T. Pallium.
concavus tab. 272 —— T. Sedgwicki.

Fusus acuminatus, tab. 274 fig. 1 to 3, should be F. aciculatus, and *Lamarck Enc. de Paris*, 57. added to the Synonyma.

CORRIGENDA.

Page 1, line 11, after flat, add (fig. 4.) and after hollow, add (fig. 3.)
1, line 8, from the bottom, "Vol. I." read "Vol. II."
2, line 5, from the bottom, "Lyme" read "Lime."
9, line 2, "SPEC." read "GEN."
10, line 12, "on the Isle of Wight" read "near Weymouth."
13, line, 1, "rugatus" read "rugata."
15, line 6, from the bottom, "Annomites semistriatus" read "Anomites semireticulatus."
15, line 17, for "connexion" read "connection."
21, line 4, from the bottom, "Breden near Derby" read "Breedon Leicestershire."
39, line 4, from the bottom, "top" read "to."
46, line 1, "BULMIMUS" read "BULIMUS."
46, last line but one, after "Jas. Holloway" add "Esq."
48, line 13, "Melanioides" read "politum."
50, lines 2 and 5, from bottom, "Melanioides" read "politus."
63, line 4, from the bottom, add "?"
65, line 5, from the bottom, "27" read "7."
72, line 10, "the outside" read "on the outside."
77, line 6, "Ammonites" read "Nautilus."
78, line 16, "Maltor" read "Malton."
93, line 8, from the bottom, "vessiculosa" read "vesiculosa."
100, line 4, "Lent" read "Sent."
104, line 5, "juncius" read "junceum."
115, line 3, from the bottom, "stiæ" read "striæ."
119, line 1, "priscus" read "prisca."
126, last line, "decustata" read "decussata."
127, line 10 from the bottom, "vessicularis" read "vesicularis."
127, line 9, from the bottom "218" read "219."
128, line 16, "vessiculosus" read "vesiculosa."

To the description of GRYPHÆA gigantea, p. 127, tab. 391, the following paragraph should be added:

Good specimens of this large Gryphite have lately been furnished me, and have served for the figure before us, by our esteemed Friend, James Clealand, Esq. who obtained them from Church-down Hill Quarry, Gloucester; it varies in size from 2 to 10 inches in width, but constantly maintains its characteristic form: Belemnites and enormous individuals of Pecten equivalvis, tab. 136, are abundant with it.

Additional localities are inserted in Mr. Farey's Supplementary Index; where also several corrections of the names of Places will be found

A SUPPLEMENTARY, OR STRATIGRAPHICAL INDEX TO VOL. IV.

Arranging the SHELLS *described therein, according to the several* STRATA *in which they were found imbedded, from the newest towards the oldest in the British Series.*

Howland Street, April 21st, 1823.

GENTLEMEN,

ON presenting to you a continuation of those *Stratigraphical Indexes* to the Volumes of "Mineral Conchology," which I have been used to prepare for my highly valued and lamented Friend, your late Father, I cannot avoid expressing the great satisfaction I feel at seeing, how well the indefatigable and able Instructions of my departed Friend, and the large collection of Specimens and materials which he has left in your possession, is enabling you to continue, to support with credit and increasing usefulness, the important work in aid of British Geology, which Mr. Sowerby set on foot, more than ten years before his decease.

In your youthful energy and love of the subject, and in the zeal and abilities of your many kind Contributors, I see with pleasure an assurance, that "Mineral Conchology" will continue its progress, until at length, it embraces every species of Shell, which can in the meantime be found imbedded, in each one of the Strata of Britain;—when this shall be accomplished, and the rich stores of British Fossil Shells, thus classified, recorded and *rendered comparable*, shall have been compared by the Geologists of other countries, with the shells which the Strata thereof may entomb, then, I am of opinion, will Geological truth appear, and the last remains of visionary and wild Theories on the subject, entirely vanish; by which Theories, until Mr. Smith (in 1792) commenced his practical investigations, and *mapping* of the English Strata, the subject was obscured, and by which, unfortunately, many parts of it are yet disfigured, and the truths of nature concealed.

As an instance, I will beg to advert here, to the manner in which Writers still cling to the unfounded dogma of an age gone by, which asserted, that "our *coal-measures* exhibit only *fresh-water* and land productions!" in despite of the evidence, which Shells recorded in your pages, of the several Genera *Ammonites*, *Anomia*, *Cardita*, *Conularia*, *Euomphalus*, *Lingula*, *Mytilus*, *Orthocera*, *Pecten*, and *Terebratula* furnish, to the contrary of such assertion; which I know to be an unfounded one, from having seen fossil Shells, of probably four times as many Genera, esteemed *marine* ones, as are mentioned above, and very numerous Species of many of these, the individuals of which are innumerably scattered through the coal series, in particular districts, in the east of Sutherland and of Dumfries Counties, in particular: and I believe that such shells are in few Coal-districts wanting, if industriously sought after.

More than four years ago, on considering the Maps by *M. Halloy*, and by Messrs. *Cuvier and Brongniart*, of the environs of Paris, it occurred to me, that the gypseous and other anomalous Strata, producing Bones of Quadrupeds, alleged *fresh-water* Shells, &c. in the vicinity, and southward of Paris, are referable to *unconformable patches of Strata*, of *a very modern era*, compared with the strata analogous to the London Clay and Deep-Well series, and the upper and lower Chalk, all of *whose southern edges these anomalous strata locally cover*. On considering also, soon afterwards, the Map and Sections of the Isle of Wight by *Mr. Webster*, I clearly perceived there, the same unconformableness (and have often since mentioned the same to my Friends:) and so with regard to the patch of strata, since alleged to contain *fresh-water* Shells, on and to the northward of Hordwell-cliff.

From what Mr. James D. C. Sowerby, has lately stated to me, I see reason also to think, that a small unconformable patch of these anomalous Strata (which I shall continue to call the *Cowes Rock*, because there, my departed Friend Mr. Sowerby *first* noticed and enriched his Cabinet, with the peculiar Shells of these strata) rests upon the edges of the London Deep-Well Strata, in the vicinity of Charlton near Woolwich: also, since compiling the stratigraphical Index to your third Volume, I have perceived, that the patch or patches of Crag-Marl in Essex, Suffolk and Norfolk, by lying upon the edges of the London Clay, and of its deep-well Strata, shews, that the *Crag* must be referred to comparatively *modern, unconformable strata;* but whether of the same, or a more antient or more recent era, than those of Paris, and the Isle of Wight &c. above mentioned, I pretend not to say, but for the present shall continue to distinguish them, and place the Crag the lowest.

I have been much pleased to see Messrs. Conybeare and Phillips* introducing a set of *Terms*, for denominating the ORDERS or greater Divisions of the British Strata, five in number, which, if generally adopted, would free us from the use of those mischievously theoretic terms and distinctions, *Primary*, *Transition*, *Flötz*, *independant Coal*, *Flötz-trap*, *Secondary*, &c. and rid us of the many futile disputes, to which they have given rise, and which they seem calculated to perpetuate in Geological writings: the *Orders* of Mr. Conybeare are accordingly introduced in the following Index.

As far as I could, I have availed myself of the excellent and cheap *County Geological Maps of Mr. Smith* (which are publishing by Mr. Cary, and sold separate) and of his Geological Table and Sections, and his other Publications, in ascertaining the stratigraphical places, from the Geographical places, of the several Shells described in this Volume; and have little attended to, many corrections which have, as appears to me, been rashly offered, and continue to be repeated or varied, almost monthly, as to the super-position or succession, and the Names, of some of the English Strata, and as to their courses across, or their detached appearances, in different parts of the country.

The number of *Species* of Shells named in the present Volume is 148, besides 4 varieties distinguished by Mr. Sowerby by β, but which nevertheless belong, to the *same strata* as their relative Shells marked *a;* in addition to which, I have been induced to propose the separation of 12 other varieties, partly on account of their belonging to *different Strata;* making thus 160 Species (or varieties) belonging as I believe to distinct Strata, described in the present Volume.

In the 46th, 52nd and 59th Volumes of the "Philosophical Magazine," Dr. Tilloch has done me the favor to insert *geographical Indexes*, to the three former Volumes of your Min. Conch. and in a few days I intend to forward to him, a similar Index for the present Volume; which will describe the local situation and the place in the Strata, of each Shell figured herein.

I beg to add

A continuation of, and additions to the TABLES in pages 243 of Vol. II. and 188 of Vol. III; particularizing such species of SHELLS, as are in the four Volumes of this Work, and in Mr. Smith's two unfinished Works on Fossil Shells, referred to more than one STRATUM; In the Index which follows, these multistratular SHELLS are distinguished by the Greek Letters α and β, unless otherwise mentioned below.

Genera.	Species.	No. of Species, or Strat. Var.	Vol.	Page.
Ammonites	Greenoughi	2	II	71
	jugosa	2	I	207
	Parkinsoni, α, β & γ	3	IV	182
Dentalium	cylindricum	2	I	178

* In their "Outlines of the Geology of England and Wales," p. vi. &c.

Genera.	Species.	No. of Species, or Strat. Var.	Vol.	Page.
Gryphæa	columba	2	IV	113
	incurva, δ, ε, ζ, & η	7	II	23
Lima	gibbosa .....γ	3	II	120
Neritina	concava	2	IV	118
Nucula	similis	2	II	207
Patella	lævis	2	II	86
	striata	2	IV	123
Pinna	tetragona	2	IV	9&10
Planorbis	hemistoma	2	II	91
Potamides	politus	2	II 109 & IV	50
Productus	lobatus	2	IV	16
	Martini	2	IV	15
Rostellaria	Parkinsoni, α, β, γ & δ	4	IV	69&70
Terebratula	intermedia, ε & ζ	6	I	48
	resupinata	2	IV	25
Trochus	Anglicus, α β & γ	3	II	95
Unio	Listeri..... δ	4	II	123

I remain, Gentlemen, your obedient humble Servant,
JOHN FAREY.

To Messrs. James D. C. and Charles E. Sowerby.

SUPPLEMENTARY INDEX TO VOL. IV.

A Stratigraphical List of STRATA, SHELLS *and* PLACES; *BY MR. JOHN FAREY.*

I. SUPERIOR ORDER of STRATA, according to *Mr. Conybeare.*

DILUVIA, or ancient water-moved ruins of Strata: Ante-Human Gravel; in low situations it is frequently covered by, and superficially mixed with *Alluvia*, or more recent Gravel.

	Tab.	
Axinus obscurus	314, 3 *up.*	Selby (in a Yellow Lime Bolder?)
Pecten cinctus	371,	Horncastle, and Suffolk, (in under Oolite?)
Terebratula affinis	324, f. 2.	Horncastle, (in Derb. P. Lime?)

COWES ROCK; unconformable Strata, containing alledged *fresh-water* Shells: Headen Hill, top of Hordwell Cliff, &c.

Bulimus costellatus	366,	Shalcombe.
ellipticus	337,	Shalcombe.
Corbula cuspidata	362, f. 4 to 6.	Colwell Bay, and White-Cliff Bay.
nitida	362, f. 1 to 3.	Colwell Bay, and White-Cliff Bay.
Limnea longiscata	343,	Headen-Hill, & near Paris.
Mya? gregarea	363,	Calbourn, & Headen-Hill.
Potamides acutus	341, f. 2.	Isle of Wight.
? cinctus	340, f. 1.	Headen-Hill, & near Paris.
duplex	340, f. 3.	Headen-Hill.
? margaritaceus	339, f. 4.	Isle of Wight.
? plicatus	340, f. 2.	near Paris, & Isle of Wight.
ventricosus	341, f. 1.	near Paris, & Isle of Wight.
Psammobia solida	342,	Headen-Hill, & Isle of W.

CRAG MARL; soft, irregular, unconformable Limestone; in E. parts of Essex, Suffolk and Norfolk: superficially mixed with diluvial gravel.

Acteon Noæ..... *t.* 374, Walton-le-Soken.
Auricula pyramidalis..... 379, f. 1 and 2 Holywells and Suffolk.
Buccinum mitrula ..... 375, f. 3. Ramshalt.
sulcatum ..... 375, f. 2. Ramshalt.
Corbula complanata ..... 362, f. 7 and 8. Roydon-Green.
Cypræa avellana..... 378, f. 3. Suffolk.
coccinelloides ..... 378, f. 1. Suffolk.
retusa ..... 378, f. 2. Suffolk.
Mya arenaria ..... 364, Holywells, and Norfolk.
Natica patula ..... 373, 3 *lo.* Holywells.
Pecten gracilis ..... 393, f. 2. Holywells.
striatus ..... 394, f. 2 to 4. Holywells.
sulcatus ..... 393, f. 1. Aldborough and Sudbourn.
Scalaria foliacea..... 390, f. 2. Ramshalt and Woodhall.
minuta ..... 390, f. 3 and 4 Ramshalt.
subulata ..... 399, f. 1. Ramshalt.

London Clay, upper, blue or Septarian Clay: the lower beds plastic, and mostly red and white mottled: Billericay, Maldén, Harwich, Barnet, &c. (on *Mr. Smith's* Maps, *coloured, dun-blué*, and in his Geological Table, *numbered* 1 and 2.)

Ampullaria ambulacrum ..... 372, Hordwell, Muddyford and Stubbington.
Ancilla subulata..... 333, Brambles-Chine, Christchurch, Grignon, Lyndhurst, and Isle of Wight.
Astarte rugatus ..... 316, Highgate.
Axinus angulatus ..... 315, White-conduit Ho. Tunnel, and Vauxhall Road.
Buccinum junceum..... 375, f. 1. Barton and Highgate.
Cancellaria evulsa ..... 361, f. 2 to 4. Barton, Lyndhurst, and near Paris.
lævìuscula ..... 361, f. 1. Barton, Highgate, Lyndhurst, & Normandy, N.E.
quadrata..... 360, Barton.
Cardium porulosum ..... 346, f. 2. Barton, and near Paris.
turgidum ..... 346, f. 1. Barton.
Chama squamosa ..... 348, Barton, near Paris.
Crassatella plicata..... 345, f. 2. Bartley-Lodge.
sulcata ..... 345, f. 1. Barton.
Fusus errans ..... 400, Barton, Hordwell and Stubbington.
Mitra scabra ..... 401, Barton.
Murex argutus ..... 344, Barton.
Natica striata..... 373, 2 *up.* Barton, and France.
Nautilus regalis ..... 355, Hyde-park and White-conduit-Ho. Tunnels.
Neritina concava α ..... 385, f. 8. Highgate, and Muddyford.
Patella striata α ..... 389, Stubbington.
Pinna affinis ..... 313, f. 2. Bognor Rocks, & Highgate.
arcuata ..... 313, f. 3. Highgate.
Pleurotoma brevirostrum..... 387, f. 2. Muddyford.
fusiformis ..... 387, f. 1. Highgate.
lævigata..... 387, f. 3. Highgate and Muddyford.
prisca ..... 386, Hordwell, & near Paris.
Potamides rigidus ..... 338, f. 1 to 4. Barton.
Pyrula nexilis..... 331, Barton, and Grignon.
Rostellaria Parkinsoni β ..... 349, f. 3 and 4. 3 *mid.* Bognor-Rocks, Harwich, and Highgate.
Sigaretus canaliculatus..... 384, Bourdeaux, Hordwell, & near Paris.
Tellina ambigua ..... 403, Barton, Colwell-Bay (Beach).

Tellina Branderi..... *t.* 402, f. 1. Barton.
filosa ..... 402, f. 2. Barton.
Trochus monilifer ..... 367, Barton, Hordwell, & near Paris.
Turbo sculptus ..... 395, f. 2. Barton.
Voluta ambigua*..... 397, f. 1. Barton.
Athleta ..... 396, f. 1 to 3. Barton.
depauperata ..... 396, f. 4. Barton.
geminata ..... 398, f. 1. Lyndhurst, & near Paris.
lima..... 398, f. 2. Barton.
Luctator jun..... 397, Barton.
nodosa ..... 399, f. 2. Barton.
suspensa* ..... (115, f. 5 and 3.) Barton.

LONDON DEEP-WELL Strata; Loams, Sands and *Nodules*, mostly of *Chert*: Woolwich, Newbury, Ridge-Hill, &c. *(light brown*, No. 3 & 4.)

Melanopsis fusiformis ..... 332, f. 1 to 7. Charlton (new), Courtagnon, Grignon, Hordwell (beach), New-Cross, Isle of Wight, and Woolwich S. W.
subulatus..... 332, f. 8. Isle of Wight.
Neritina concava β ..... 385, f. 1 *to* 7. Charlton, and Isle of W.
uniplicata ..... 385, f. 9 & 10. Charlton N. E., Newcross, and Plumstead.
Ostrea bellovacina ..... 388, f. 1 and 2. Charlton N. E., and Woolwich.
edulina? .... 388, f. 3 and 4. Charlton, & Woolwich, SW.
Potamides concavus ..... 339, f. 1 and 2. Barton-Cliff (beach), and Headen-Hill.
politus α ..... 339, f. 3 and 5, and 147, f. 6 and 7. Plumstead-Heath.
Rostellaria Parkinsoni, α .. 349, f. 1 and 2. 3 *first*. Bray, S. E., Faversham, Gunters-hill, & Reculvers.

II. SUPERMEDIAL ORDER OF STRATA.

CHALK, upper, soft, flinty; Chiltern Hills, South and North Downs, Dunstable S.E. S. & S.W. &c. (mostly *light green*, No. 5.)

Ammonites peramplus ..... 357, Eastbourne, and Lewes E.
.....? (II. p. 57 & IV. 81.) Dover, N.E.
Gryphæa globosa ..... 392, St. Giles's Gate, & Meudon.
Pecten nitidus ..... 394, f. 1. Brighton, near Lewes, and near Paris.
Plagiostoma Hoperi ..... 380, Lewes E. and Northfleet.

CHALK, lower, hard, grey, flintless; Hurlock, White Cawkstone, Firestone; Dunstable N.W, N. & N.E. &c. *(Deep green*, No. 5.)

Ammonites Lewesiensis ..... 358, Dover S.W. and Lewes.

CHALK-MARL, Malm, or Blue Marl, earthy or coloured Chalk, red Cawkstone, Clunch, Firestone, &c. Hockliffe S. Homesdale, &c. *(white*, No. 6.

Ammonites dentatus ..... 308, Cambridge, Folkstone, and St. Pot.
lautus ..... 309, Cambridge, Folkstone, and St. Pot.
proboscideus ..... 310, f. 4, & 5. Cambridge, and Folkstone.
tuberculatus ..... 310, f. 1 to 3. Cambridge, and Folkstone.
Rostellaria Parkinsoni, γ..... 349, f. 5. Folkstone, Hamsey, Middleham, Ranscomb, and Southbourne.

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* The V. ambigua t. 115, f. 5. is now V. suspensa, see p. 135, Note, and p. 137.

GREEN SAND, or Sandstone, chloritic? often micaceous Sand; Fullers'-Earth; Leith-Hill, Nutfield, Blackdown, Haldon, &c. (very *light blue* or white, No. 6.)

Gryphæa columba, α . .... *t.* 383, f. 1 & 2. Mans W.
vesiculosa ..... 369, Warminster.
Ostrea carinata ..... 365, Chute-farm, Folkstone Town, France, Maestricht, and Selbourn E.
Pecten asper ..... 370, f. 1. Horningsham.
obliquus..... 370, f. 2. Warminster.
Pinna tetragona α ..... 313, f. 1. Devizes N.
Rostellaria calcarata ..... 349, f. 6 and 7 *5 low.* } Blackdown.
Parkinsoni δ ..... 349, f. 5. *3rd in 2nd rank,* } Blackdown, and Parham-Park.
Turbo moniliferus ..... 395, f. 1. Blackdown.

PORTLAND ROCK, or 4th Oolite, partly oolitic, in Sand and Marl; Kentish Rag Limestone; Aylesbury, Wardour, Swindon, Purbeck, &c. (Sand *brownish red, Nos.* 8 and 10, Limestone *blue,* No. 9.)

Ammonites Brodiœi ..... 351, Portland-Isle.
Parkinsoni γ ..... 307, f. 2. Shotover-hill.
Astarte obovata..... 353, Sandown-Bay.
Gryphæa sinuata ..... 336, Adlington-Hills, Ashford, Black-gang Chine, Folkstone, S. W. & Shanklin-Chine.
Nautilus radiatus ..... 356, New-Malton E.
Plagiostoma rusticum ..... 381, Shotover-hill.
Sphæra corrugata .... 335, Sandown-Bay.

OAKTREE CLAY, blue, with nodules of stony Marl, Selenite, pyritic Extr. Fos. bituminous Marl.....and Kimeridge Coal: Thame, Stanford, &c. (*greenish blue,* No. 11.)

Gryphæa nana ..... 383, f. 3. Shotover-Hill
Pinna granulata..... 347, near Weymouth.

CORAL RAG, and Pisolite, or 3rd Oolite; local in Woburn Sand; Wooton-Basset, Hedington, Pickering, &c. (*orange,* No. 12.)

Ammonites perarmatus..... 352, New-Malton.
Plagiostoma læviusculum..... 382, New-Malton.

WOBURN SAND, ferruginous Car-Stone, Fuller's-Earth, siliceous Wood often in Green-Sand: Wavendon and Aspley Heaths, Little-Brick hill, &c. (*brownish red,* No. 13.)

Ammonites plicomphalus 359 & 404, Bolingbroke N. E.

CLUNCH CLAY, or Fen Clay; Blackmoor, Otmoor, &c.....beds of Clunch or dogger-stone? Wavendon, Fenny-Stratford, Oxford, &c..... *light purple,* No. 14.

Ammonites mutabilis..... 405, Braken-wood End.

Gryphæa bullata..... 368, Braken-wood End.
Pinna tetragona β ..... 313, f. 1. near Parma, and Sandfoot Castle.

ALUM SHALE, with Cement Balls, or Septaria (wrongly called *Lias,*) Jet, Selenite, Bones &c. Whitby, Titherton, Lyme-Regis E. &c..... (*dun purple,* No. 15.

Ammonites Davœi..... 350, Lyme-Regis.
fibulatus..... 407, f. 2. Stowbrow, and nr. Whitby.
subarmatus ..... 407, f. 1. near Whitby.

KELLOWAYS STONE; in Canals S. E. of South-cerney, S. of Chippenham, and N. W. of Trowbridge, at Staiths, &c..... (*dun purple,* No. 15.)

Ammonites Gulielmii..... 311, Kelloways-Bridge.

CLAY ON UPPER OOLITE; stone-beds, corals &c: S and E. of Bath, Farley, Bradford, (Wilts.) &c. (very *light yellow,* No. 19.)

Terebratula coarctata ..... *t.* 312, f. 1 to 4. Bath E., Bradford (Wilts.), Charterhouse-Hinton, Farley, Hampton-down, Kings-down, Pickwick W., Stoford, & Winsley.

Fuller's Earth Strata, grey, lead-coloured and purple Clay; slippy Banks of Knolls N and S of Bath; Northleach, Northampton, N. of Stamford, &c. (very *light orange*, No. 21.)

Gryphæa columba β..... 383, *lo.* Northamptonshire.
Lutraria angustata ..... 327, Nunney.
Terebratula reticulata ..... 312, f. 5 and 6. Frome S. W.

Under Oolite, inferior, lower, bastard, or 1st Oolite: N. E. and S. of Bath, Dundry and Churchdown Hummocks, lower Costwold and Edge Hills, Uppingham, &c. (*reddish orange*, No. 22.

Ammonites Parkinsoni α ... 370, f. 1, 3 & 4. Yeovil N.
Gryphæa gigantea ..... 391, Cherington (Carrington?), Churchdown-hill, Farley-Wick, and near Ilminster.
Pecten cinctus ... . 371, (Horncastle & Suffolk. Dil.)

Marlstone, Ovenstone, Marl, Mineral Springs, &c. Glastonbury, Cheltenham E., Banbury, Oakham, Belvoir Castle, &c. .... (very *light blue*,* No. 24.)

Ammonites Smithi..... .. 406, & 73 *up. r. corn.* } Marston-Magna (or Bread?)
Terebratula fimbria ..... 326, Charlton-Kings, and Cleeve.

Blue Lias; beddy, water-setting or Hydraulic Limestone; Watchet, Aberthaw, Southam, Barrow, &c. ....(*dun blue*, No. 26.)

Ammonites Parkinsoni, β..... 307, (Brit. Min. *t.* 12) Keynsham.
Spirifer Walcotti .... 377, f. 2. Bath W., Camerton, Keynsham, & Parton-Passage.

Yellow Limestone, buff, red-land, or Magnesian Limestone: popplestone, cornstone: Aberford, Ferry Hill, Sunderland, &c. .... (*greenish blue*, No. 29.)

Axinus obscurus..... 314, 3 *up.* Garford Cliff, (Selby, Dilu.)
Productus horridus ..... 319, f. 1. Derbyshire.
humerosus..... 322, Breedon.

Pontefract Rock, Sandstone, often soft, and loose Sand; Hardwick-Hall S W. Hooton-Roberts, Collingham,† &c. (*greenish blue*,‡ No. 29.)

Axinus.....? ..... 314, *lo.* Kingsville-House, and Wentbridge N Hill.

III. MEDIAL ORDER of STRATA.

Coal-Measures, carboniferous Strata: Sandstones, Crowstones, Canks (or limestones), Shales, Binds, fire Clays, Coals, Iron stones, &c. Derbyshire, Yorkshire, Newcastle &c.....(*Indian Ink*, No. 30.

Anomia..... ? .....(Vol. IV. p. 75.) Northowram.
Pecten papyraceus..... 354, Denholme-Gate, Elland, Idle S., Moor-Town, and Northowram.
.....? .....(Vol. IV. p. 75.) Northowram.
Productus lobatus β ..... 318, f. 6. Cumberland.
Terebratula resupinata β ..... 325, Alton (see Brit. Min. t. 455,)

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*On Mr. Smith's *Rutland* and *Leicester* county Geological Maps (sold singly by Cary) he has distinguished the stoney parts of this assemblage of Strata, by a *reddish brown* colour.

†See Annals of Philosophy, 2nd series Vol. V. p. 275.

‡On Mr. Smith's *Yorkshire* Geological Map, he has distinguished this Rock by a *purplish red* colour, and marked it a.

LIMESTONE SHALE, or great Shale, locally imbedding Gritstone and Shale Limestone, and thin Coals. (Derby Report I. p. 227.)

Productus concinnus.....	*t.* 318, f. 1.	Derbyshire, Richmond (York), and Well-houses Farm.
lobatus α	318, f. 2 to 5.	Arran-Isle, Derbyshire, and Well-houses Farm.
Martini β.....	317, f. 4.	Barney-River.

DERBYSHIRE-PEAK Limestone; Under-coal, Metaliferous, Basaltic, or Mountain* limestone: Bristol, Much-Wenlock, Halkin, Aldstone, Kendal, &c. (*purple blue* No. 31.)

Productus antiquatus	317, f. 1 5&6.	Cloghran, Derbyshire, and Monyash.
comoides	329,	Llangefni S.
giganteus.....	320,	Bakewell, W. Buxton W (1st), and Yorkshire.
hemisphæricus ...	328,	Mynydd-careg Wales.
latissimus.....	330,	Puffin-Isle, and Tyddyn-mawr Farm.
Martini α	317, f. 2 and 3.	Ashford (shale), Bakewell, (1st), Croom-hill (4th), King's-county, Limerick county, and Sutton.
personatus	321,	Derbyshire, and Kendal.
punctatus.....	323,	Black-Rock Cork, Buxton, and Chelmerton E. (3rd.)
sulcatus	319, f. 2.	Derbyshire.
Spirifer ambiguus	376,	Bakewell (shale) 1 ½ m. W.
minimus	377, f. 1.	Bakewell, do.
Terebratula acuminata	324, f. 1.	Bakewell (1st), Blackrock Cork, Brassington (3rd), Buxton, Scalebar, and Thorpe, (4th).
affinis	324, f. 2.	Dudley N., and Malvern Hills, W. (Horncastle dilu.)
? imbricata	334, f. 3 & 4.	Castleton, and Settle.
? lineata	334, f. 1 & 2.	Castleton, and Hope.
resupinata, α ...	325,	Dove-dale (4th), Hucklow (1st), Stoney-Middleton (1st), and Tideswell (3rd).

OLD-RED SANDSTONE, occurring rarely.

IV. SUBMEDIAL Order of STRATA.

COARSE-SLATE, STEASCHIST, ROOFING-SLATES, slaty LIMESTONE, &c.

V. INFERIOR Order of STRATA.

MICA-SLATE, GNEISS, GRANITE, &c.

UNKNOWN STRATA, of vastly *greater specific gravity than Granite.*

NOTE: I have been unable to place in the above List, Patella striata, β t. 389, for want of stratigraphical information: the same happened in previous volumes, as to Shells from Colomby, Golleville, and Valognes, all probably situated on the same strata as Hauteville, in the Medial order of Strata?

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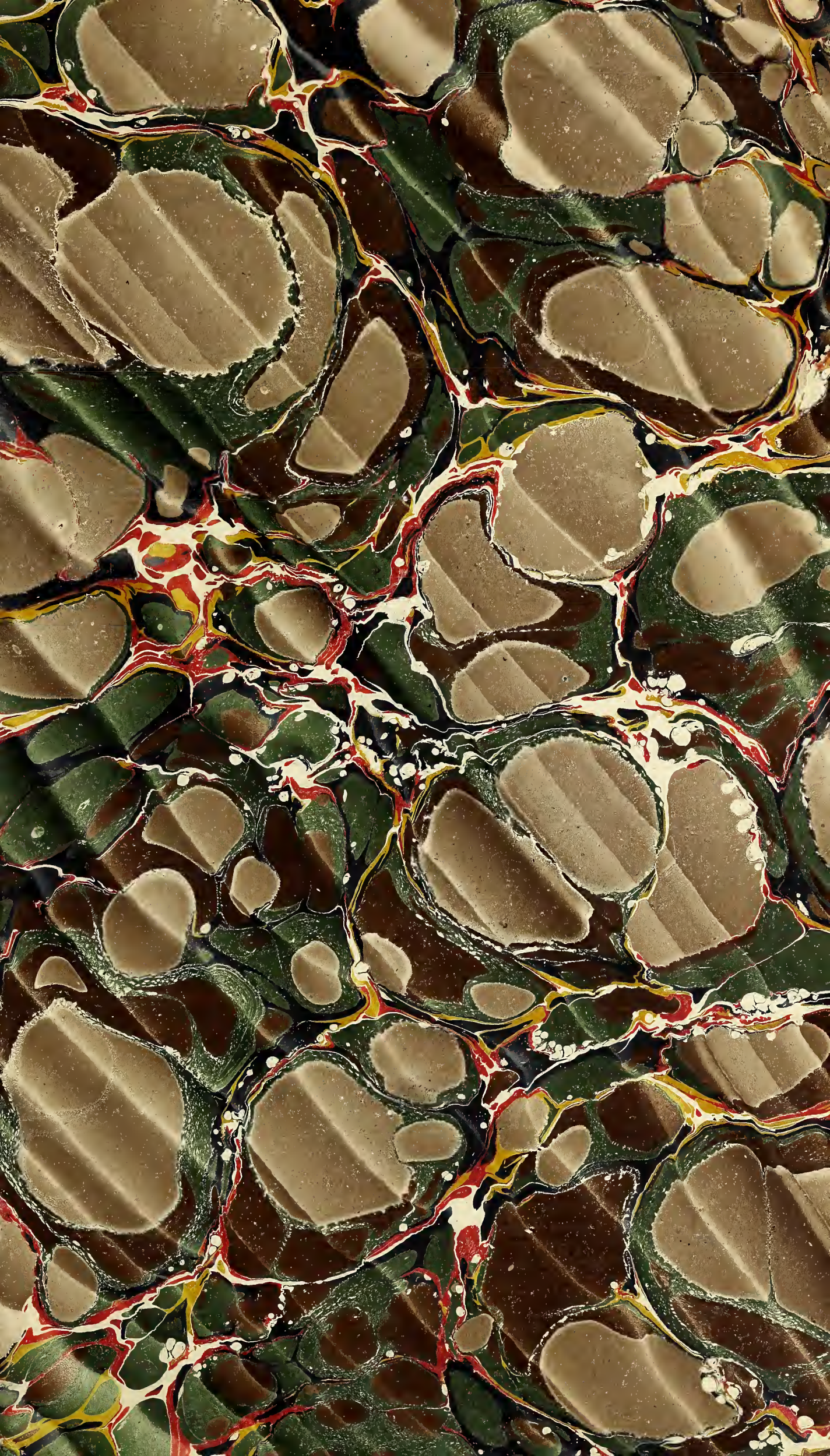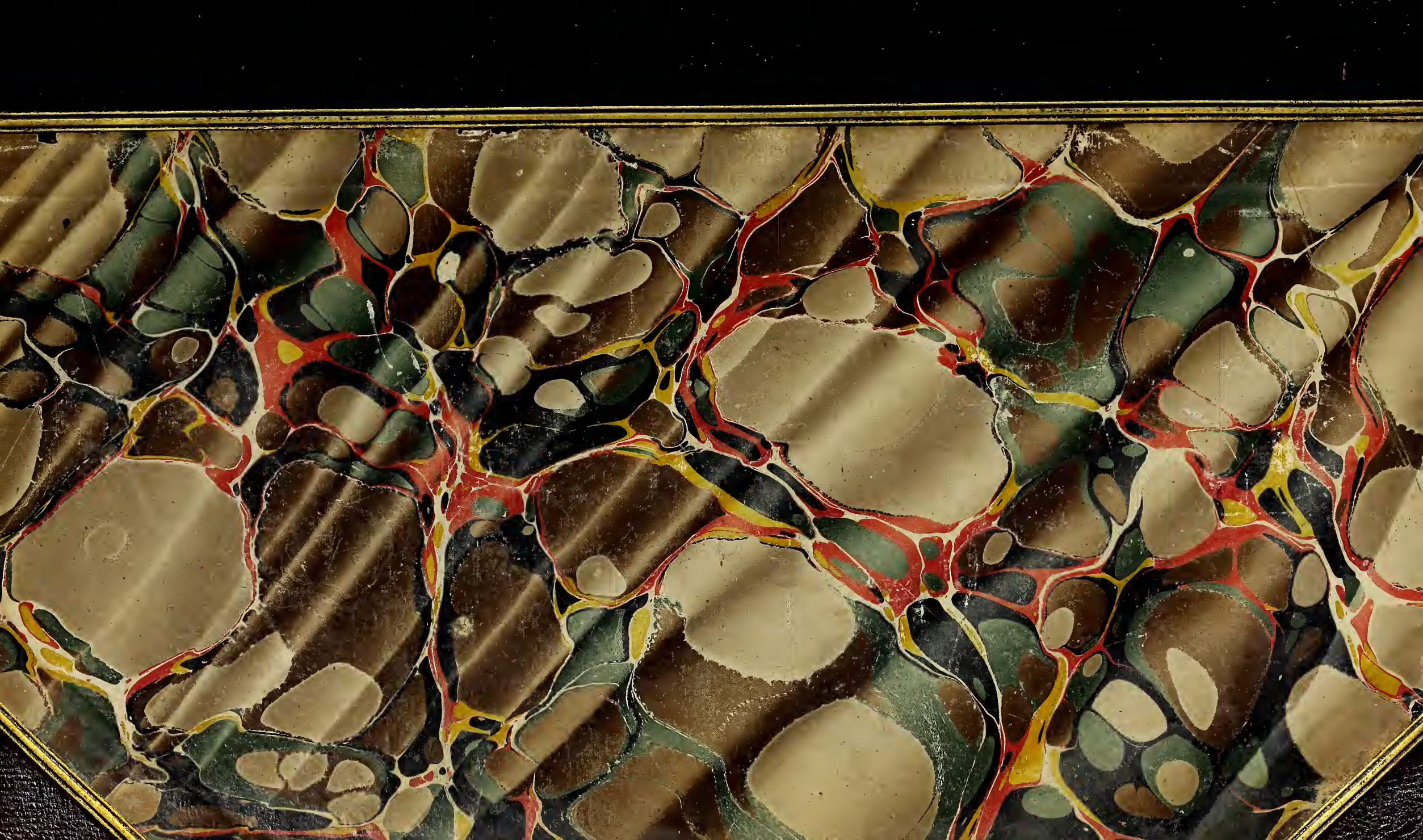
*This Rock would, with propriety be denominated the *Valley* Limestone of the Irish Bog-Districts; it sometimes forms Hills, but rarely if ever, is found in Mountains.